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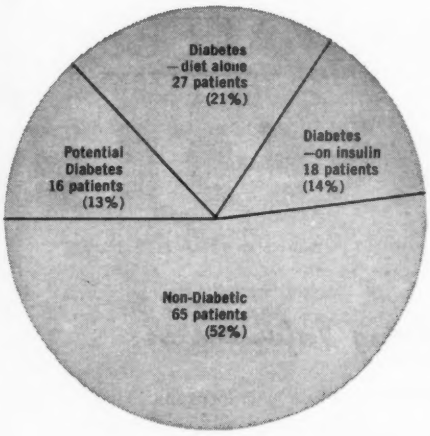

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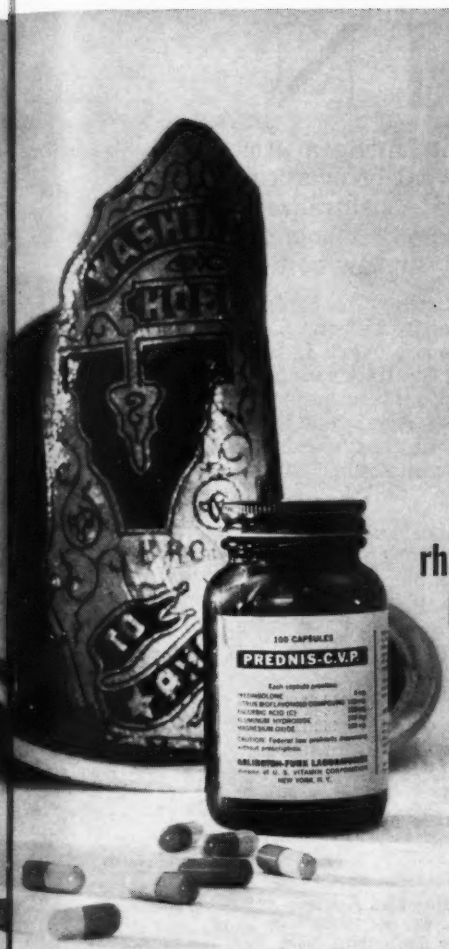

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Crane, C., Deep Venous Thrombosis and Pulmonary Embolism, New Eng. J. Med., **257**, 147, 1957.

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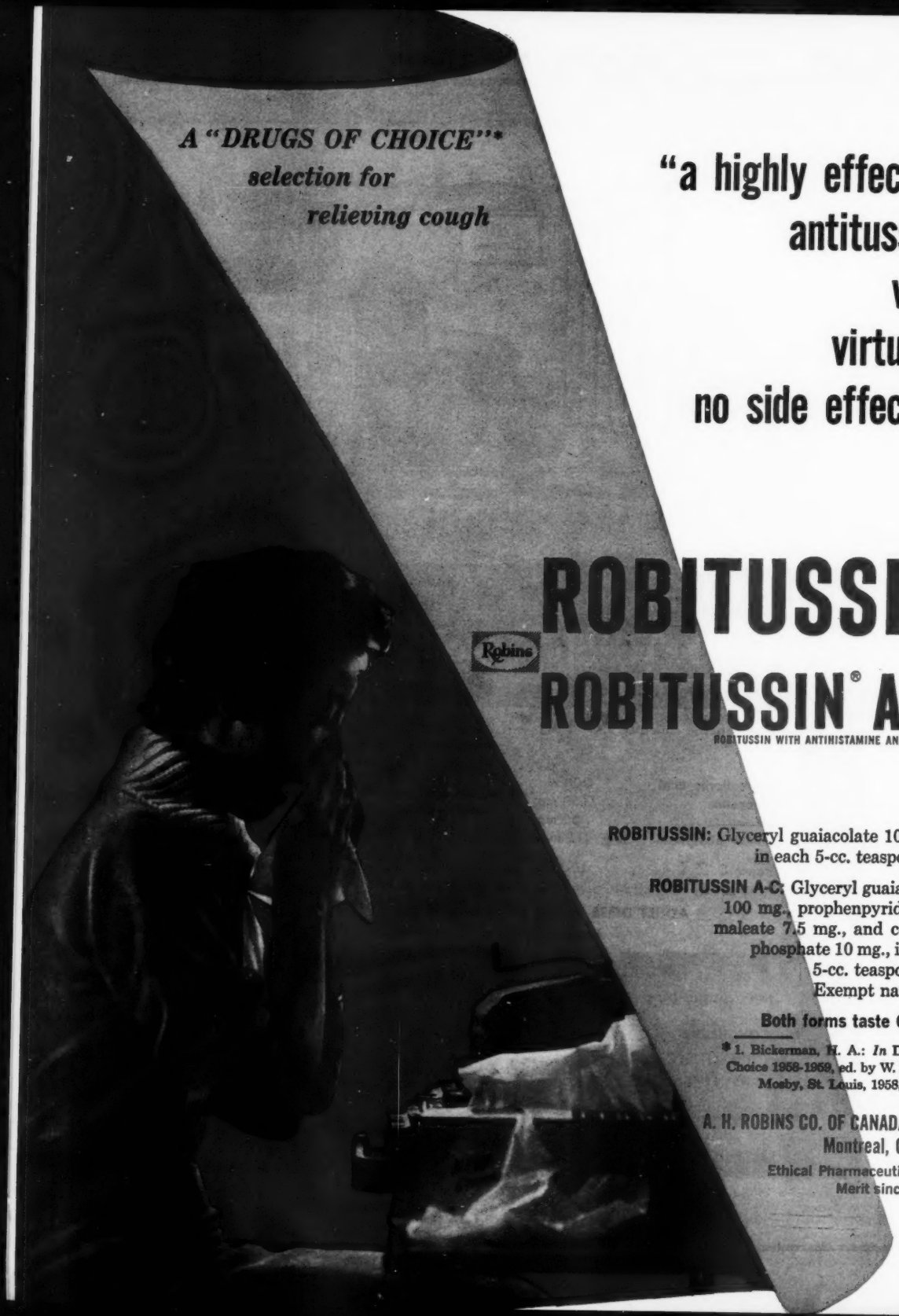

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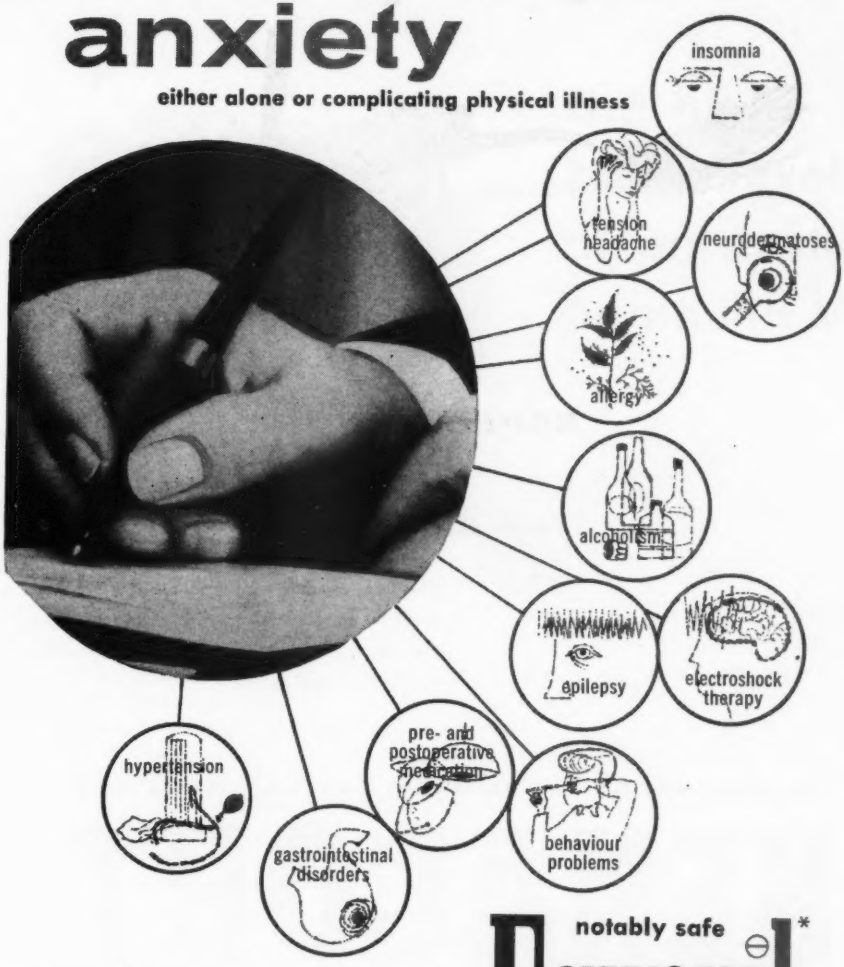

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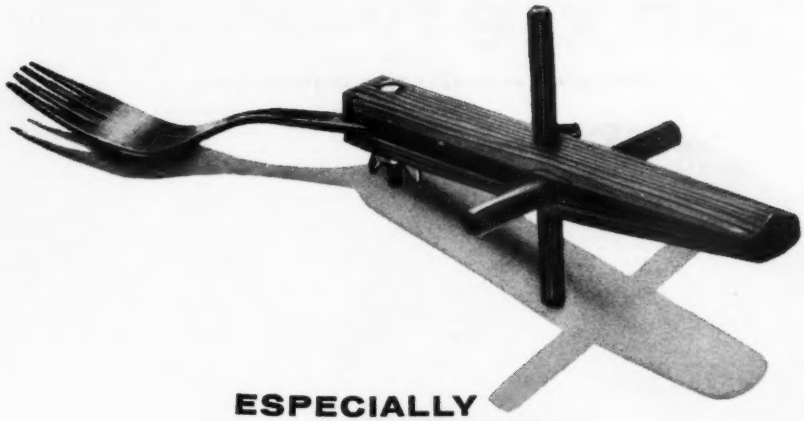

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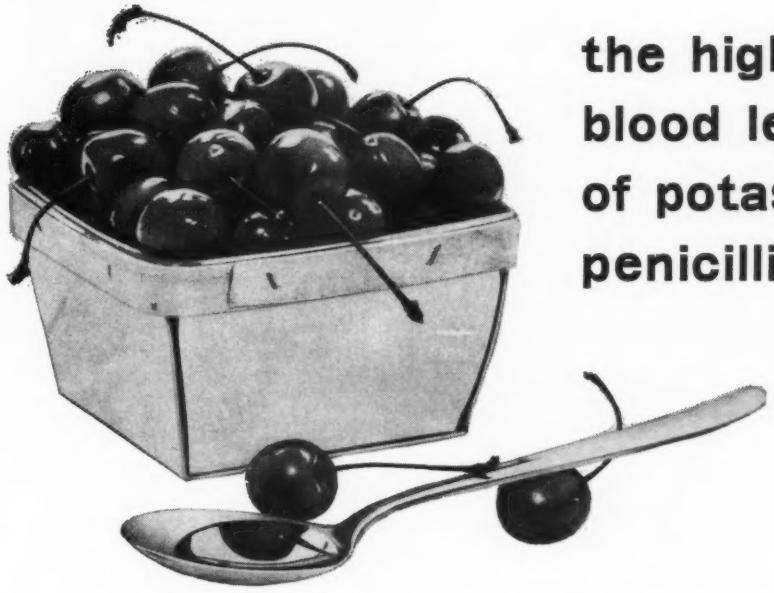

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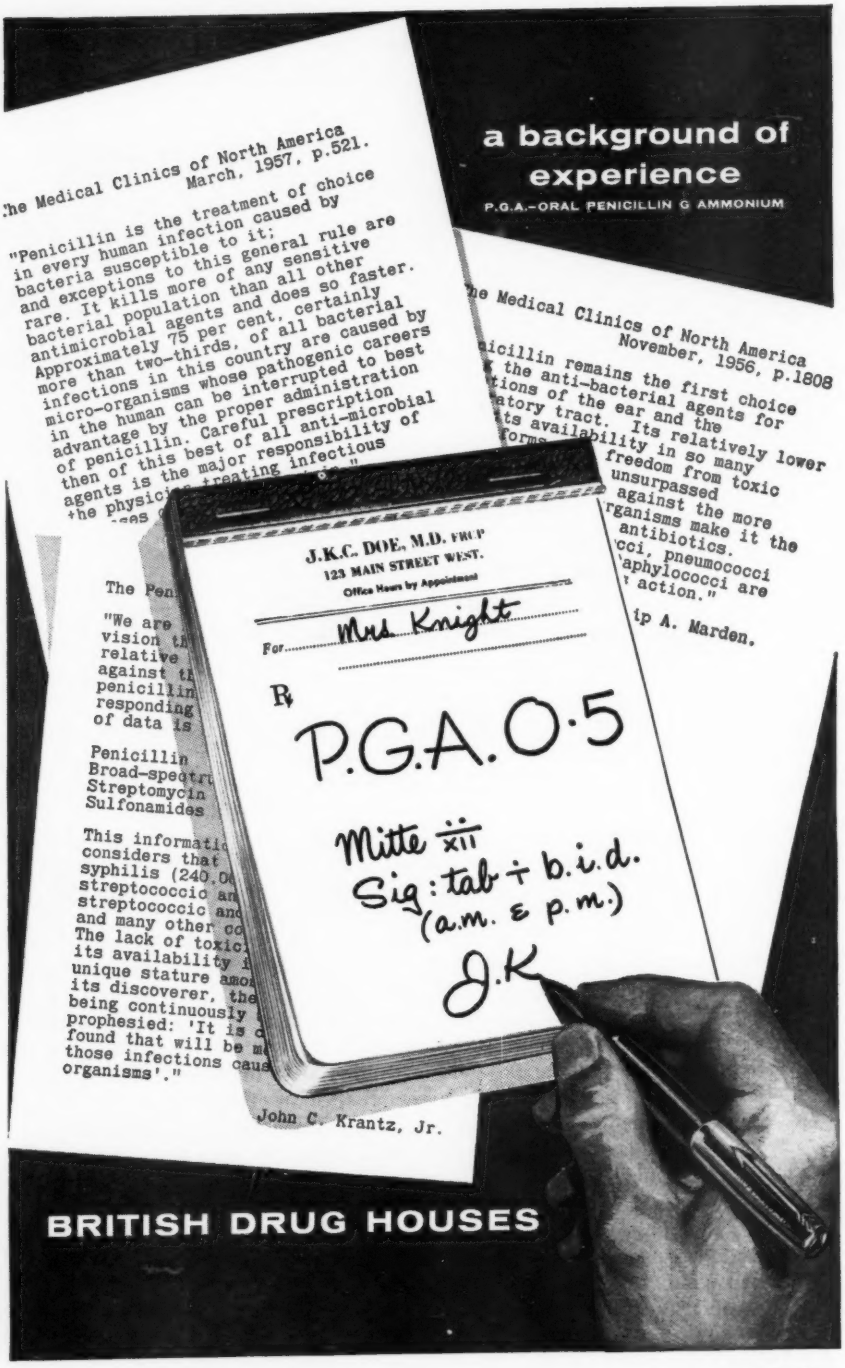
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The Manitoba Medical Review

Vol. 39 JANUARY, 1959 No. 1

Ophthamology

Recent Studies in Ophthalmology

Howard Reed*

M.B., M.S. (Lond.), F.R.C.S. (Eng. & C.), F.A.C.S.

Department of Ophthalmology, University of Manitoba

Preservation of Cornea for Grafting**

In Canada and in the United States it is very difficult to obtain corneal material for grafting. For this reason less corneal grafting is done on this continent than in Europe and the British Isles. This has led to research in the preservation of corneae. Much original work has been done by Ormsby and his colleagues in Toronto, and in a series of excellent papers he has outlined the main requirements for the successful preservation of corneae.

We have been hoping to establish the means of storage of corneae in Winnipeg. In order to find out the best methods of preserving human corneal material, experiments with rabbit corneae have been conducted in the Bacteriology Department of the Winnipeg General Hospital.

At first the viability of the frozen corneae was tested by grafting it to the healthy corneae of rabbits. This was found to be unsatisfactory because the clarity of the graft depends upon so many variable factors, such as skill in technique and immune body reactions. It was, therefore, decided to use tissue culture as a means of testing viability.

We have studied the following aspects of the subject:

a) Media for Storage

Serial concentrations of glycerine in Hank's balanced salt solution were used. Pieces of rabbit cornea were placed in each of these dilutions, which were then frozen and stored for several weeks. At the end of the test period the material was thawed and set up in tissue culture. It was found that 15% glycerine gave the best results. This conforms with the findings of Ormsby and others.

b) pH of Medium

The cornea was placed in media with pH ranging from 6 to 9. This was then frozen and stored for a given period. At the end of this time the tissue was thawed and placed in tissue culture. It was found that pH of 8 was the most suitable. We found it useful to place an indicator in the medium. Thus, if the medium became acid, as it did on a number of occasions without apparent cause, the indicator changed color. It was found that this change of color was always accompanied by death of the tissue.

c) Temperature of Storage

The following temperatures were tried: — 10° C, — 15° C, — 25° C, — 34° C, — 70° C. We found that temperatures of — 25° C to — 34° C were satisfactory. Corneae have been stored at these temperatures for periods of from two to three months and at the end of this period they have been found to be viable as a tissue culture.

d) Rapid or Slow Freezing

When we first began these experiments the corneae were frozen rapidly by placing the container in dry ice and adding alcohol. This resulted in a rapid fall to a temperature in the region of — 79° C. This was a most inconvenient method because in many cases the glass containers cracked. We found that it was also quite unsatisfactory because it appeared to kill the tissues on every occasion.

The containers were then wrapped in various thicknesses of paper towels in order to slow the rate of freezing. We have found that wrapping the container in four paper towels results in a slow freeze and does not tend to kill the tissue.

e) Rapid or Slow Thaw

At first we allowed the frozen material to thaw out gradually at room temperature. This killed the tissue. When, however, the frozen cornea was placed in Hank's balanced salt solution and thawed rapidly by placing the container in a water bath at 37° C, the tissue was viable.

Thus to preserve viability, it is necessary to freeze the tissue slowly and thaw it rapidly. Experiments are continuing and it is hoped that in the near future a bank of preserved human corneal material will be established.

Cataract Surgery — Chymotrypsin

Cataracts have been treated surgically for more than 2,000 years, but it is only during the last few decades that the results have been really satisfactory. Daviel in 1752 made the first big step forward. He introduced the extracapsular operation.

*Winnipeg Clinic.

**This work was done in collaboration with Dr. J. C. Wilt and Mr. F. S. Stanfield of the Bacteriology Laboratory and was assisted by grants from the Winnipeg Clinic Research Institute, the Imperial Surgical Company, Winnipeg, and Messrs. Johnson & Johnson, Montreal.

(Fig. 1). He made an incision at the edge of the cornea with a triangular shaped blade. The incision was then enlarged with scissors. The anterior capsule of the lens was cut and the cataract was pushed out of the eye through the incision. This left behind the zonule and the posterior capsule of the lens which together formed a diaphragm separating the vitreous and the aqueous. (Fig. 2). The disadvantage of this operation was that it tended to leave soft lens matter behind which frequently irritated the eye so that it became inflamed and later developed a secondary cataract.

In 1903 Smith introduced an improvement upon the extracapsular operation which is known as the intracapsular extraction. (Fig. 3). He ruptured the zonule of the lens using pressure only. In his hands the operation was satisfactory but other less dexterous surgeons found the manoeuvre difficult. Various modifications were made, and just before the last war the intracapsular operation became more popular. It was found that the zonule was ruptured more readily by grasping the lens capsule with forceps and combining a gentle pull on the capsule with pressure upon the outside of the eye.

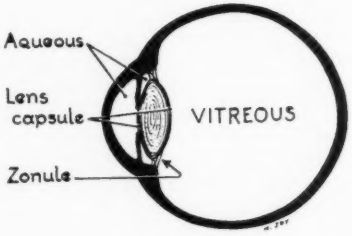

Figure 1
Anatomy of lens capsule and zonule

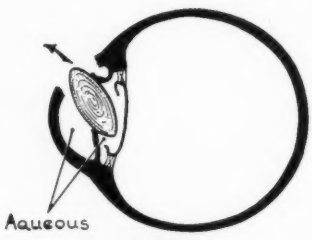

Figure 2
Extracapsular cataract extraction leaving the diaphragm composed of posterior lens capsule and zonule intact

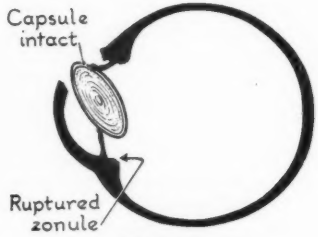

Figure 3
Intracapsular cataract extraction showing rupture of the zonule. The lens is contained in an intact capsule

Unfortunately, the capsule occasionally ruptured before the zonule. The lens was then incompletely extracted and soft lens material remained behind. As in the extracapsular operation this caused irritation and inflammation and the lens material often became opaque and occluded the pupil.

An erisiphake was then introduced which consisted of a little suction cup. A small rubber bulb, like that of an eye dropper, was attached to it. This was compressed to expel the air. The cup was then applied to the lens and a partial vacuum caused the capsule to be sucked into the cup of the erisiphake. This permitted a more gentle grasping of the capsule than did the capsule forceps. It was not entirely satisfactory, however, because the degree of suction was difficult to control.

Several years ago Dr. Barraquer of Barcelona introduced an erisiphake fitted with a mechanical vacuum pump which controlled the degree of suction exactly. I had the privilege of watching him use this apparatus in Barcelona last year. He has superb surgical skill, and there is no doubt that it is an excellent method of extraction.

During the last few months he has introduced the use of an enzyme called Chymotrypsin. The background to its introduction is interesting. He was consulted by a patient with a long standing vitreous hemorrhage. The eye was practically blind and there appeared to be no hope of any restoration of sight. In view of the claims that have been made for the value of trypsin in dispersing hemorrhage, Dr. Barraquer injected it into the eye in the hope that the vitreous hemorrhage would absorb. A few days later he noticed to his astonishment that the lens had dislocated.

He suspected that this might be due to the trypsin dissolving the zonule. Experiments on cadavers were carried out and his suspicions were confirmed. He found that if trypsin is dropped upon the lens, it does in fact dissolve the zonule, and the lens may be lifted away from the vitreous face without difficulty.

He then used it during cataract operations and found that it makes the extraction easier and reduces the risk of rupture of the capsule. Cogan in England has used the drug for the same purpose and he has reported the same results.

The Armour Laboratories have kindly provided some Chymotrypsin for experimental purposes, and I have used it in 30 cataract operations. There is no doubt that it does dissolve the zonule and it seems that Chymotrypsin has no serious effects upon the eye. The introduction of this enzyme represents a considerable advance in cataract surgery.

Intra-Ocular Acrylic Lenses

The removal of a cataract results in the loss of the lens of the eye, a condition called aphakia. A strong convex lens must then be worn in glasses to correct the resulting error and give good vision.

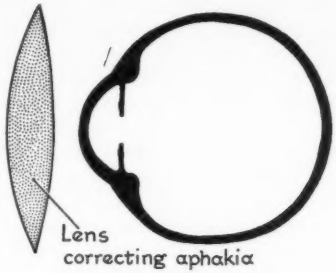

Figure 4
Aphakia — correcting lens in glasses

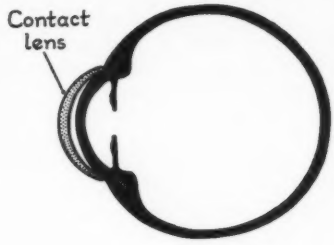

Figure 5
Contact lens in aphakia

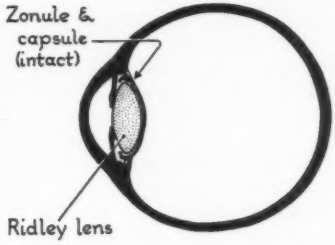

Figure 6
Ridley acrylic lens in the position of the normal lens

(Fig. 4). After the successful removal of a cataract from an otherwise healthy eye, the patient should see the 20/30 or 20/20 line on the visual chart.

Unfortunately, however, there are a number of difficulties to be overcome. In the first place, the correction of an aphakic eye in this way causes the retinal image to be magnified one and one third times the size of a normal retinal image. If a cataract is removed from one eye and the other eye is normal, the correction of the aphakic eye will, therefore, result in double vision. Secondly, vision through the edge of the correcting lens is blurred due to spherical aberration. Patients are thus restricted to using the central area of the lens.

In an attempt to correct this double vision some patients are provided with a contact lens for the aphakic eye. (Fig. 5). For a few this is a satisfactory solution. Others are unable to tolerate the wearing of a contact lens. To them it feels as if they have a permanent foreign body in the eye, and the irritation is greater than the advantage they gain from wearing the lens. Moreover, when the contact lens is worn, the retinal image is about 9% larger than that of the normal eye and this causes difficulty in some patients.

In 1951 Ridley made the revolutionary step of introducing an acrylic lens behind the iris into the position occupied by the normal lens. (Fig. 6). This can only be done after an extracapsular extraction which leaves the zonule and posterior lens capsule intact. If it is done after an intracapsular extraction the lens lacks support and dislocates backwards into the vitreous. Unfortunately the posterior lens capsule sometimes becomes opaque so that the vision fails after a time. Ridley has performed this procedure on several hundred eyes with a fairly high degree of success.

Other operators have not been so successful with the Ridley method. More recently Strampelli of Italy has suggested that an acrylic lens should be placed in the anterior chamber in front of the iris. (Fig. 7). Other surgeons are using this method and a large number of shapes and sizes of lens have been devised for this purpose. At first it was feared that a lens introduced into the anterior chamber might give rise to glaucoma, but no such cases have been reported. Some thought that serious inflammation might occur, but whilst slight inflammation is common, severe inflammation is rare.

Much experimentation and research has been carried out, and these lenses are now being manufactured by several firms. Each lens is made to measure depending upon the diameter of the cornea and the refractive error of each eye.

There is a growing demand for this type of custom-made intra-ocular plastic lens. It seems that this method is now passing from the experimental stage and that it is indicated for the patient with monocular aphakia who is unable to tolerate a contact lens.

It is unwise to use these lenses for the elderly patient with bilateral cataracts. The insertion of an intra-ocular acrylic lens involves another major operation and this is to be avoided in the elderly. Glasses are most satisfactory for these patients.

It seems probable that during the next decade more and more people will be fitted with intra-ocular acrylic lenses after the removal of a cataract.

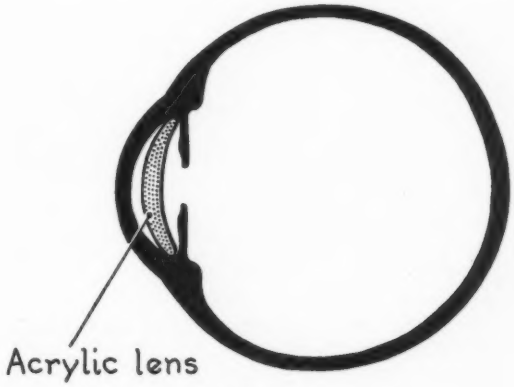

Figure 7
Strampelli anterior chamber lens

Cardiac Arrhythmias Occurring During Squint Surgery*

The presence of the oculo-cardiac reflex has long been recognized. Firm pressure upon the eye is the classical first aid treatment for paroxysmal tachycardia. Eye gouging is a most effective form of offence. Not only does it deprive the eye of sight, it also causes severe bradycardia and shock.

The afferent pathway of the reflex is via the ophthalmic division of the trigeminal nerve to the mid-brain. The efferent pathway is the vagus nerve. The reflex arc can, therefore, be broken by agents acting upon the trigeminal nerve or by vagolytic drugs.

During the last few years several reports have appeared in the American ophthalmic literature suggesting that operations for squint involve a greater anaesthetic risk than is generally realized. Cases have been described in which the heart was slowed significantly by traction on the extra-ocular muscles during the operation. A few deaths from cardiac arrest have occurred.

My interest was aroused by these reports. In several hundred squint operations, I did not remember any anaesthetist mentioning to me that bradycardia occurred. It seemed that this was an over-rated danger. The problem was discussed with Dr. T. McCaughey, the anaesthetist at the Children's Hospital, and with Dr. Michael Saunders of the electroencephalographic laboratory at the Children's Hospital, and we agreed to carry out an investigation.

We studied cardiac arrhythmias in the following way. The electro-encephalographic and electro-cardiographic changes were recorded continuously throughout the operation. The E.E.G. gave a graphical record of the depth of the anaesthesia and the E.K.G. recorded the heart beat. Various drugs were used for pre-medication. When the child was anaesthetized the conjunctiva was opened and the squint hook was inserted in the usual way around the muscle that was to be operated upon. A gentle tug was given to the muscle and the E.K.G. recording was watched to see if any slowing or irregularity of the heart rate occurred. (Fig. 8). In some cases there was no slowing. The operation then proceeded normally. If, however, slowing was observed, the effect of various drugs in preventing the reflex was studied. The following drugs were injected in different cases: atropine, flaxedil and local anaesthetics. A short period after the injection the effectiveness of the drug was tested by another tug on the extra-ocular muscle.

Atropine

Atropine is the vagolytic drug in most common use in anaesthesia. We found that the average dose of atropine which is given before an anaesthetic is not a complete protection. 80% of our patients showed some slowing of the heart when traction was applied to the extra-ocular muscle. In many cases this bradycardia was difficult to detect clinically, but it was obvious when seen graphically on the E.K.G. chart. An intravenous injection of atropine grains 1/200 gave complete protection in all cases in about 30 seconds.

Flaxedil

We found that this drug was extremely effective in preventing the occurrence of the reflex. Within 3 minutes of an intravenous injection of flaxedil the heart rate increased and tugging on the extra-ocular muscle failed to produce any bradycardia. It is known that flaxedil has a vagolytic action, but it also reduces the tone in the extra-ocular muscles. It may, therefore, be that flaxedil acts upon both ends of the reflex arc.

Local Anaesthetics

Several reports have appeared in which ophthalmologists have claimed that local anaesthetics such as xylocain give a complete protection against bradycardia during squint surgery. We were unable to substantiate this claim. A retro-bulbar injection of a local anaesthetic appeared to be effective in about 50% of cases, but in the other 50%, a slight slowing of the heart rate was demonstrable on the graph of the E.K.G. It is probable that a great deal depends upon the quantity of local anaesthetic injected and whether the injection is given into the correct site within the retro-bulbar muscle cone so that the branches of the trigeminal nerve are anaesthetized.

Our experiments have revealed that the oculo-cardiac reflex is a hazard which deserves greater respect than it has previously been accorded. We found we were unable to forecast when cardiac arrhythmia would occur, nor the degree of slowing. It seems that in Winnipeg we are blessed with a particularly good team of anaesthetists because clinically detectable bradycardia occurs so seldom.

There is no doubt that the value of these studies is not confined to ophthalmic surgery. It is a common knowledge amongst anaesthetists that impulses from the throat may set up a vago-vagal reflex and cause bradycardia in a manner similar to the oculo-cardiac reflex. Anaesthetists often notice some slowing of the heart during bronchoscopy or when inserting an endotracheal tube. It seems that the vago-vagal reflex is of considerable significance in causing the relatively high mortality associated with tonsillectomy in some centres.

The practical value of this investigation was demonstrated a short time ago. Dr. McCaughey was giving an anaesthetic to a patient with congenital heart disease upon whom Dr. I. H. Beckman was about to perform a tonsillectomy. The child had been given the usual preoperative dose of atropine but as soon as Dr. Beckman grasped the

* My colleague, Dr. J. E. L. Bendor-Samuel, assisted me in this study.

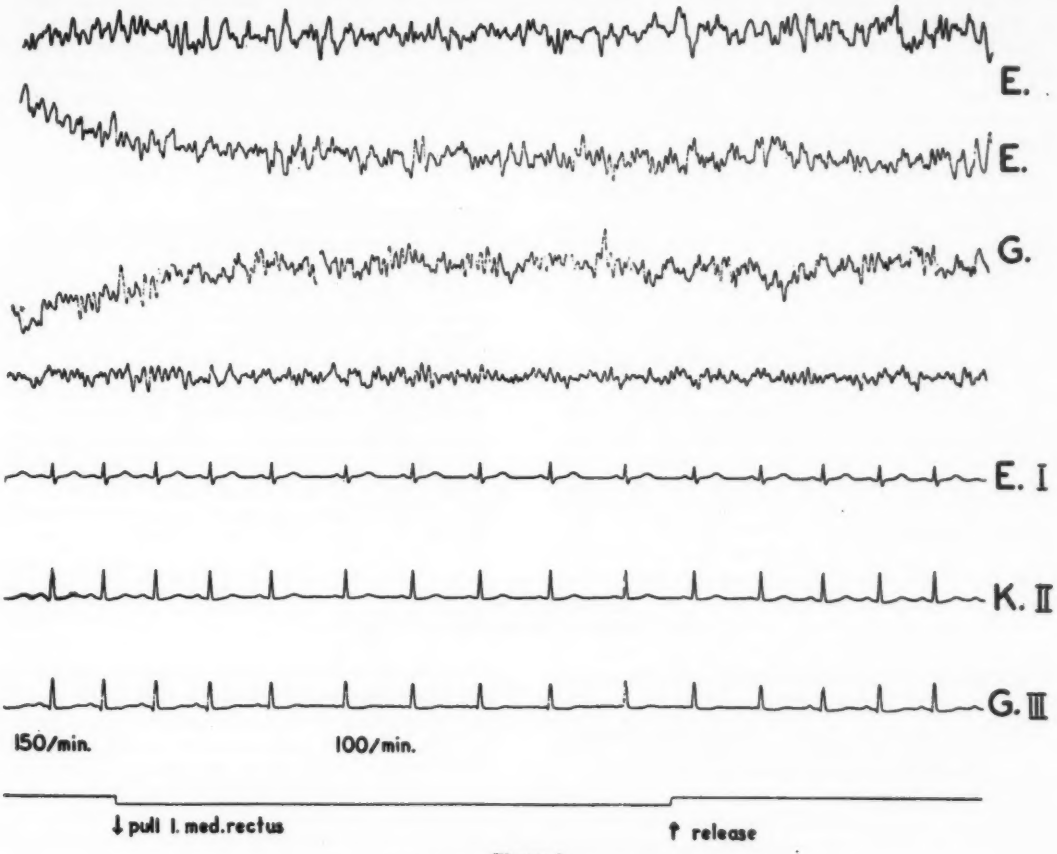

Figure 8
An actual tracing showing Bradycardia, due to traction on the medial rectus muscle during a squint operation

tonsil, Dr. McCaughey noticed bradycardia. He asked Dr. Beckman to wait a short while and gave an intravenous injection of atropine. A minute or so later the operation proceeded and no further change in the heart rate was noted.

The Role of Perimetry in Management of Pituitary Adenomas

In general terms it may be stated that the rare basophil adenoma never affects vision, the eosinophil type seldom causes severe visual loss, but the chief feature of the relatively common chromophobe tumour is visual failure; indeed, the only reason for removing the chromophobe adenoma is to prevent blindness. The surgical removal of these tumours by the transfrontal route is accompanied by a high mortality. This is due to the fact that the adrenal glands of these patients are often atrophic from lack of the adrenotrophic hormone of the pituitary. They are thus unable to cope with conditions of sudden stress. Major surgery and severe infections tend to cause adrenal failure, which must be treated by giving corticosteroids or corticotropin. Despite the use of hormonal therapy, the removal of a pituitary tumour is an operation which involves considerable surgical hazard.

Radiation was first used in the treatment of these tumours more than thirty years ago, but it seldom halted the advance of acromegaly in eosinophil adenomas or the progressive visual failure in chromophobe adenomas. The pituitary gland is small and far from the surface and the older units were not capable of concentrating an adequate dosage on it without causing severe superficial burns. It was found that radiotherapy failed and surgery was required in more than 60% of cases.

It is, therefore, encouraging that a series of papers have been published during the last few years suggesting that radiotherapy may now control the enlargement of a high proportion of these tumours. With the development of more powerful radiotherapy units with energies of two million volts or more, a much higher dose may be given

to the pituitary without damage to surface tissue. Doses of 3,000 or 4,000 given by a cross-firing technique have produced better results. Horrax has reported that surgery was required in only 12% of his 66 cases after this therapy. Chamlin has reported that in 180 patients further visual loss was halted in 90% and the vision improved in 60%.

In an excellent series of papers, Chamlin has emphasized the importance of perimetry in the accurate assessment of the advance of chromophobe adenomas and their response to radiotherapy. He recommends that the visual fields should be charted at regular intervals using the 2 mms. white target at 330 cms. and the 1 mm. target at 2 metres. During the period of radiation treatment these two isopters should be measured every three or four days. If sudden visual loss occurs it may be due to oedema in the tumour. Further therapy should then be delayed or reduced in dosage until the vision improves. When therapy is complete the fields should be charted at monthly intervals until they appear to be stationary. The interval may then be increased.

There are two points which should be stressed. Firstly radiotherapy should never be given unless the diagnosis is clear and the presence of a meningioma or aneurysm has been eliminated. Secondly, in the radiotherapy treatment of chromophobe adenoma, perimetry is the most important measurement of response to radiotherapy.

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Surgery

A Review of Cardio-Pulmonary Surgery for 1958

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The past 12 months in that area of surgery concerning the heart and lungs have exhibited a consolidation of principles and methods rather than development or discovery of new ones.

The research aspects of diseases of the heart and lungs have grown to comparatively immense proportions, and there can be little doubt this effort will further translate itself into successful clinical trial. That this is so, is evidenced by the ever greater number of research presentations at the clinical sessions of medical meetings from a local to an international level.

The Heart

I. The Congenital Diseases.

A. Extracardiac Anomalies

1. Patent ductus arteriosus — This defect, now almost universally considered a surgical problem at the time of diagnosis, continues to yield a near perfect result following its division. In the North American literature division rather than ligation has become the standard practice, primarily on the recognition that the very short wide ductus which is seemingly difficult to divide is the one most likely to recanalize following a successful ligation. Mortality is exceedingly low, being less than one per cent in trained hands.

The existing problem in patent ductus arteriosus concerns those individuals in whom the lesion is associated with a significant degree of pulmonary hypertension. Although within recent years the practice of turning away individuals for surgery who have had evidence of reversal of their shunt was gaining acceptance, it has been demonstrated that there is no infallible pre-operative method of predicting that the ductus, through which a reversal of shunting has occurred, has categorically reached the inoperable stage. Certainly, in the vast majority of cases where the reversal is only intermittent or partial, division of the ductus will be attended by a cure. In others where the shunt may be almost totally from right to left, operation may still be warranted with a direct measurement of pulmonary artery and systemic pressures at the time the ductus is temporarily occluded. In those individuals in whom the pulmonary artery pressure rises sharply, closure of the ductus is probably not warranted. However, it is only by such direct assessment that these cases can be separated from the more significant number of patients with borderline pressures in whom surgery may still be curative. Follow-up studies have demonstrated that a regression of pulmonary vascular changes with the return of pulmonary artery pressure to physiologic levels can and does occur.

2. Coarctation of the Aorta — Little has been added to the established principles in the treatment of aortic coarctation. The technical problems have been aided by the use of moderate hypothermia in

the poor risk patient. In older individuals in whom the operation may prove exceedingly lengthy and technically intricate, the use of some form of controlled shunt (that is, from the left atrium to the femoral artery) in conjunction with a simple pump has been advocated to reduce the cardiac work and safeguard the lower spinal cord in the event that extensive mobilization of the distal aorta becomes necessary.

Although by preference the elective surgical treatment of patients with coarctation of the aorta is 6-8 years of age, there have been increasing reports of successful resection and anastomosis in infants under the age of two years who were not doing well on a non-operative regimen. The youngest case on record in which a successful resection and anastomosis was carried out was 16 days. Whether the anxiety concerning the failure of anastomotic growth at such an early age is justified still remains to be settled. There can be little doubt, however, that many infants have been salvaged for the time being that might otherwise have failed to survive infancy.

B. Intracardiac Anomalies

The surgical management of this group of defects has spread in an ever widening circle. The mortality which was originally high has become increasingly more acceptable. The methods utilized in the management of these lesions are still the same, namely hypothermia and the use of pump oxygenators. Hypothermia continues to find its main application in the repair of uncomplicated septum secundum atrial septal defects. The mortality rate of this operation is less than five per cent, and seems justified in most symptomatic cardiomegalic patients in whom the diagnosis is clear cut and in whom severe pulmonary hypertension has not developed. In addition hypothermia has been applied (by those groups accustomed to its use) for the successful treatment of isolated congenital pulmonary or valvular aortic stenosis. By and large only moderate degrees of hypothermia are employed—that is 28-32 degrees C.—which permit approximately eight minutes of safe total circulatory rest. Hypothermia as a method has the advantages of relative simplicity when compared to the use of pump oxygenators.

A direct visual approach to the treatment of congenital pulmonary or aortic stenosis is now recognized as being superior to the blind valvulotome procedures which although usually reducing the pressure gradient across the stenotic valve toward normal (and markedly improving the patient's symptoms) seldom achieve reduction of pressures to true physiological levels. The dangers of inducing regurgitation particularly in the aortic valve are much less but still exist even by the direct visual approach. There are some centers which feel rather strongly that aortic valve stenosis should be corrected by the use of a pump oxygenator rather than hypothermia — the additional time available by the former method permitting a more accurate commissure splitting of the valve as well as dealing more adequately with some cases which have a significant degree of subvalvular stenosis as well. On occasion this subvalvular component may not become evident until the stenotic valvular element has been corrected.

A varied but impressive list of other congenital intracardiac anomalies continues to be treated with increasing success. These include ventricular septal defect, ostium primum defects (atrioventricularis communis), Fallot's tetralogy, infundibular stenosis with intact ventricular septum, etc. All these abnormalities require periods of intracardiac operating time which extend beyond the safe limits of hypothermia or which hypothermia could provide only with the increased dangers of ventricular fibrillation (usually difficult to reverse) at lower temperatures (less than 28 degrees C.). There exists today three commercially available oxygenators with which one can obtain relatively safe periods of cardiopulmonary by-pass.

The bubble oxygenator, which has had extensive application, has the advantages of being simple and economical to construct. In clinical usage a new unit is put together for each case, the size depending on the flow rate required. The simplicity of the bubble oxygenator is appealing to many who are handicapped by limitations of monitoring personnel. A major disadvantage of this method is the necessity of the use of an extraneous (although seemingly inert) chemical agent to break up the oxygenator blood foam. There has been some evidence to show that the presence of excessive amounts of the defoaming agent may induce breakdown of the normal blood-brain barrier which results in cerebral damage or actually widespread minute emboli of anti-foam particles. These hazards are under extensive investigation and the use of a more tenacious anti-foam substance applied on a broader defoaming surface has largely eliminated this hazard.

The vertical screen oxygenator is also in extensive clinical use. It has the advantage of avoiding bubbling and turbulence (although some degree of turbulence seems necessary for efficient oxygenation). It is a larger overall unit and consequently requires considerably more donor-blood to prime it prior to operation. With this type of oxygenator constant monitoring is advisable to ensure perfect oxygenation.

The third type of oxygenator used is called the membrane oxygenator. Here sheets of plastic (Teflon) separate the blood from an oxygen rich atmosphere and the oxygen diffuses into the blood on a gradient basis. The membranes are banked at close intervals producing a more bulky unit which again may require considerable amounts of

blood for priming. Of all oxygenators this method more closely approximates the physiology of the human lung, however the more critical features of its construction and application have made it lag behind the first two methods described above.

The pumps which are coupled to the oxygenators have either been occlusive or non-occlusive in their construction. The occlusive type of pump forcefully closes a segment of blood tubing in the oxygenator circuit and by a series of oscillating fingers massage the blood forward within the tubing in a unidirectional manner. Many workers in this field have felt that this type of pump is too traumatic to the blood elements, and this may be true particularly where high flow rates with a small stroke volume are employed. However, where care is taken to assure that the stroke volume of the pump is large, there is satisfactory evidence to show that the occlusive type of pump need not be excessively traumatic to blood components. The occlusive type of pump has the advantage of assuring the operator of a constant positive flow even in the face of relatively high resistance. Non-occlusive pumps act by propelling the blood along its circuit by only partially compressing the line and allowing for some "slippage." These pumps usually consist of eccentrically set rollers at either end of a horizontal rotating arm. When carefully regulated they are efficient and generally considered less traumatic to blood elements than the occlusive types.

Most recently a few centers have begun to combine hypothermia with some form of heart lung machine. Although this method has been practiced in Japan for over 3 years, its use in America has been only sporadically reported. The advantage which this combination of methods provides is primarily a marked reduction of flow requirements. These flow requirements although quite small will under the circumstances still permit prolonged periods (1 - 2 hours) of intracardiac operating time. A second perhaps more practical aspect is the reduced amounts of bank blood needed with this method. In areas where many cases are scheduled and waiting lists long, the demands on the local blood procurement agency can indeed reach intolerable levels.

Hypothermia in these cases is induced rapidly to rather low levels (20 degrees C.) by use of a thermostatically controlled cooling (and heating) coil which surrounds an extracorporeal portion of the blood circuit. The occurrence of ventricular fibrillation at these levels is common. However, since the patient is being well maintained by the by-pass machine, successful defibrillation can be achieved without haste.

1. Ventricular Septal Defect — The operative correction for this abnormality, which was first achieved in 1954, continues to yield satisfactory results. The frequency of this lesion has only recently become apparent and there are indications that it is probably the commonest form of isolated cardiac malformation which can occur. At the same time it is evident that the disorder is a serious one and very few cases have been seen in older patients.

Although the indications for closing a ventricular septal defect are broad there can be little debate that in any individual in whom there is beginning or associated pulmonary hypertension the necessity for immediate operation is urgent. Furthermore the development of pulmonary hypertension and its more lethal implications can occur over a relatively short period of time in individuals with this defect who, by cardiac catheterization, have been shown to have previously had normal pressures. Serial cardiac catheterization has demonstrated that pulmonary hypertension may become apparent and progress to high levels within a period of 12 months or less in some cases. On this basis it would seem desirable that closure of all ventricular septal defects be considered when associated with any significant degree of shunting or where pulmonary hypertension is already present.

The risk of surgery for this particular lesion has in trained hands been reduced to a remarkably low level. Of all intracardiac anomalies which have been attempted, defects of the ventricular septum have assumed the largest portion of most reported series. At present the surgical mortality has in some instances been under 5 per cent, and there would seem little doubt that within the next few years it will fall to levels comparable to that of patent ductus arteriosis. Within this period of time it may well become evident that the hazards of observation in individuals in whom this lesion is known to exist probably exceed the risks of surgery.

2. Atrioventricularis communis — This anomaly more than any other has demonstrated the necessity of adequate exposure and time in the repair of lesions located within the chambers of the heart. In its complete form, which is encountered in a majority of cases, it consists of an ostium primum atrial septal defect, a cleft in the aortic leaflet of the mitral valve with resulting mitral regurgitation, a corresponding cleft in the tricuspid valve with tricuspid insufficiency and an accompanying septal defect located high beneath the atrio-ventricular leaflets where they have failed to fuse to the ventricular septum. The physiological result of this abnormality is a heart in which all four chambers are in some degree of communication and this usually expresses itself as an intermittently cyanotic infant who develops pulmonary hypertension within a very few months after birth.

Despite many attempts utilizing hypothermia in the repair of these lesions (this method having been

so successful in the ostium secundum type of atrial septal defect), the universal failure to achieve satisfactory repair with survival has proven the indispensability of employing a form of cardiopulmonary by-pass. The risk of operation although considerably higher than in an uncomplicated ventricular septal defect is probably somewhere around 15-18 per cent.

3. Tetralogy of Fallot — The past 12 months have brought forth a widening acceptance of the fact that recognized methods of surgical treatment of patients afflicted with this malformation should be seriously reconsidered. There is no doubt that a systemic pulmonary shunt (Blalock-Taussig or Potts procedure) has in many instances been life-saving and produced worthwhile improvement in the patient's condition. At the same time it has become increasingly apparent that in a great many individuals these operations have proved inadequate beyond a certain period of growth. Development which had initially improved following the shunting procedure later lagged. Similarly exercise tolerance which had initially been benefited later became progressively diminished. The factor of adding a fifth feature to the four abnormalities present (albeit a compensatory one) has never been entirely acceptable. The figures on the hazard of the shunting operations would indicate a risk of about 15 per cent in most series.

The development of methods for direct visualization of the cardiac interior has permitted a curative approach, namely, removal of the pulmonary stenosis with repair of the ventricular septal defect. Technical difficulties associated with this particular operation had at first resulted in a surgical mortality approaching forbidden levels; however more recent series from the hands of the same surgeons have shown that the curative approach can be employed with a mortality rate at least comparable to the 15 per cent quoted above. This has been achieved in a group of cases which included some individuals who had previously had one or even two systemic pulmonary shunts and in whom these had eventually proven inadequate.

II. The Acquired Lesions

Although the advances in surgical therapy of these disorders have not reached a plane comparable to that in congenital heart disease, there has been, nevertheless, a very significant number of promising accomplishments. These will surely serve as a firm basis for the early evolution of more curative surgical approaches.

1. Mitral Stenosis — The surgical treatment of mitral stenosis remains essentially unchanged; however, there has been a more firm acceptance of the fact that the standard blind finger or instrumental commissurotomy under certain circumstances may be an inadequate and hazardous procedure. Furthermore it has been pointed out by numerous authors that with few exceptions the best long term results in the surgery of mitral stenosis have been in those patients in whom wide separation of both commissures can be achieved along with adequate mobilization of adherent or fused chordae tendinae.

On the foregoing basis the standard operation has in some centers been modified. A right sided approach to the left auricle has been advocated in that it gives more ready access to the postero-medial commissure, and avoids the left auricular appendage which is frequently a source for a potential embolus. The approach may be a safer one in cases being operated on for the second time and in whom the left auricular appendage has been thoroughly ablated at the primary operation. In those centers where pump oxygenators are in standard use, selected cases of mitral stenosis have been undertaken utilizing the open heart technique. There can be no argument that seeing the exact pathology and carrying out the appropriate measures to provide a functioning valve are more easily achieved under vision and using both hands rather than blindly and using one finger. Moreover, in that selected group of individuals in whom the blind operation of digital commissurotomy is inadequate or hazardous, an open cardiotomy utilizing the pump oxygenator may carry a comparable or even more acceptable risk. Although the indications for this latter method have not firmly crystallized at this time it would appear that for the following circumstances in cases requiring surgery its use should be considered: (a) Cases with recurrent embolization, (b) Recurrent mitral stenosis, (c) Cases in whom a significant degree of regurgitation is suspected (see below), (d) Cases with marked valvular calcification and (e) marked debility (Class IV patients).

2. Mitral Regurgitation — Prior to the advent of methods of open heart surgery, surgical management of mitral regurgitation consisted of placing a sleeve of pericardium or autogenous vein across the regurgitant orifice on the ventricular side of the valve, attempting to constrict a widely dilated mitral annulus by mattress suture, or by circumferentially constricting tapes placed at the level of the annulus. Although there were isolated cases of dramatic improvement by these methods, as a group they have not withstood the test of time.

A more careful examination of the fresh heart at autopsy has clearly shown that mitral regurgitation manifests itself because of varied pathology. There may be a widespread dilatation of the annulus with relatively little abnormality of the valve leaflets. On the other hand there may be marked leaflet involvement with an absolute loss of valve substance or in many instances a combination of both types of pathology. Utilizing open heart methods, these facets of the diseased valve can be individually assessed and corrected. In addition the left ventricle can be filled with saline and the competency of the valve after repair can be

visually tested. In many instances the posteromedial cusp is almost entirely normal and the regurgitation is secondary to a severely shrunken lateral leaflet. Here a roll of compressed polyvinyl sponge so placed that it will provide an opposition post to the functioning medial cusp can completely remedy the problem. The sponge appears to be readily accepted and incorporated by the invasion of fibrous tissue and endocardium. Similarly, marked shrunken chordae tendinae which have drawn the mobile edge of the valve downward with resulting regurgitation can be liberated. Whether or not the newer procedures will yield a longstanding cure cannot be assessed at this time; however, their continued application to patients who are otherwise severely crippled or show relentless progression of their disability would seem logical and warranted.

3. Aortic Stenosis — Here again direct vision has begun to supplant blind instrumental dilatation of a severely stenotic valve. A demonstration by left heart catheterization of a gradient of more than 60-70 mm. of mercury across the stenotic orifice would appear to be an acceptable standard for surgical intervention. Of all valves afflicted by the rheumatic process, the aortic valve is the one most frequently the site of large dense calcific deposits in amounts which even at the autopsy table may render the problem seemingly inoperable. In spite of this there is a sizeable segment of patients with this disorder in whom careful incision of the commissures through the open aorta can restore valve function with reduction or near abolition of the ventriculo-aortic pressure gradient. Aside from the more obvious advantages of direct vision in these cases the dangers of rupturing a cusp or breaking off a calcific plaque to form a lethal embolus are markedly reduced. These latter problems are very real by the blind transventricular or transaortic instrumental methods which to date have had more widespread application.

4. Aortic Insufficiency—The use of the Hufnagel ball valve prosthesis for cases of aortic insufficiency has offered acceptable palliation to many patients with severe regurgitation of this valve. The advent of open heart methods has permitted a reassessment of the pathology in this disorder. Although there are many workers who maintain that the only solution here is a completely new valve placed below or at the site of the severely regurgitant one (and this is a promising project), there are many cases that can be provided with an efficiently functioning valve by direct assessment and repair of the pathology. Regurgitation in its pure forms is due to a shrinking and rolling back of the contact edges of the aortic cusps. By methods which permit direct access to the valve, the restoration of these contact edges with pledgets of polyvinyl sponge and in some instances by direct suturing or mobilization of partially fused commissures can yield a vastly more efficient valve. This has already been accomplished in a small published series of patients with an alleviation of symptoms and restoration of normal diastolic and pulse pressures.

5. Coronary Heart Disease — Although this problem has been explored both experimentally and clinically for over two decades, an accepted practice in surgical treatment is still forthcoming. The past year has demonstrated most conclusively that, while there are multiple and varied approaches to this problem, the thing which is lacking most is a reliable objective method of assessing the benefit of the various procedures which are being undertaken.

Four methods, with or without slight modification, are currently being employed to attempt to re-vascularize or re-distribute the available blood to an ischemic myocardium. These are:

(a) Beck procedure. This method employs a combination of epicardial depilation and controlled constriction of the coronary sinus. The more even distribution of available blood which this operation is thought to bring about results in an electrically more stable myocardium. Beck has shown both experimentally and clinically that the electrical instability resulting from areas of differential myocardial oxygenation constitute a major threat to continuing myocardial contraction often terminating in ventricular fibrillation due to autoelectrocution.

(b) Direct Coronary Endarterectomy—A method which may be of value where the disease is well localized to a short segment high in the coronary system. On the basis of postmortem studies this situation is found in about 12 per cent of cases.

(c) Internal Mammary Artery Implantation (Vineberg): The experimental demonstration that new vessels may communicate with a mammary artery implanted into the myocardium seems without doubt. However the confirmation that these implantations remain functional or offer the patient significant protection from further infarction has not had independent confirmation. In experienced hands this procedure has appeared promising. Again the clinical results are difficult to assess as human controls for such an operation are lacking.

(d) Internal Mammary Artery Ligation: This operation which originated in Italy almost 20 years ago has been a most controversial issue among cardiologists and cardiac surgeons in the past year. Although extensive series have been performed, there is no sound physiological basis for the belief that high ligation of the internal mammary arteries will actually increase blood flow to the myocardium by collaterals such as the pericardiophrenic and associated channels at the base of the heart. The procedure is attractive in that it is simple and can be performed under local anaesthesia. In two reported series in which the double blind technique

was used (that is, in one case the vessels actually being ligated, and in the next case the skin incision only being made), the results would indicate that something more than a serious doubt exists regarding the operation's therapeutic value. Despite this fact many patients are relieved of their symptoms and there is an ever increasing number of American distributors for this originally Italian product.

Clinical improvement in coronary heart disease need not necessarily be the result of a particular operation. Much has been learned of the pitfalls and difficulties in assessing the results of such surgery. The operations of Beck and Vineberg are more firmly rooted on a broader experimental basis, however their efficacy and more widespread acceptance will require additional time.

III. Pulmonary Hypertension

The development of changes in the media and intima resulting in the narrowing of the smaller arteries and arterioles in the lungs continues to present a tremendous challenge to the cardiac surgeon. The changes reflect themselves in an increase in the pulmonary artery pressure and resulting overload of the right ventricle. Clinically these changes may occur under varying circumstances. The resistance has been observed in instances where the outflow of the pulmonary circulation (e.g. long standing mitral stenosis) is increased, or under circumstances in which the dynamics of the inflow of the pulmonary circulation are altered (e.g. ventricular septal defect, patent ductus arteriosis). In some cases it would appear that the normal foetal histological features of the more intimate pulmonary vasculature persist into the post-natal period and advance under conditions favorable to their progression. Whatever the situation under which pulmonary hypertension exists, it pyramids the risk of surgical treatment and may completely offset a favorable outcome in what might otherwise be a curative operation.

The etiological factors are still poorly understood; however, some aspects have come under experimental scrutiny. It can be demonstrated that excessive blood flow with resulting pulmonary plethora is not within itself a stimulus to the development of the characteristic lesions and associated hypertension. More significant than flow would appear to be the subjection of the pulmonary circulation to the physical characteristics of a systemic, (that is, left) ventricular thrust at levels of systemic resistance. Moreover the part played by pulmonary vascular spasm either alone or in combination with the organic histological changes is still to be defined.

Considerable doubt existed as to the possibility of the regression of these vascular changes following the elimination of the anomalies or defects with which they are associated. More recently there have been reports of serial post-operative heart catheterizations in children who have had severe lung changes and associated pulmonary hypertension and in whom the pulmonary artery pressures have returned to normal levels at variable intervals up to two to three years after the operation. In addition long term follow-up of experimental animals in which these changes are induced would indicate that at least a partial recanalization and healing of the involved vessels after the elimination of the etiological mechanisms can occur.

The problem which pulmonary hypertension presents to the surgeon is expressed in terms of higher morbidity and mortality. This has been variously exhibited as a poor tolerance to anaesthesia, a higher incidence of operative heart block, the post-cardiotomy syndrome, and severe pre- and post-operative pulmonary complications. Many new avenues have been explored to counter this problem. At the same time the realization of the insidious and often rapidly progressive development of pulmonary hypertension has prompted cardiologists to seek in more concrete terms an accurate clinical and physiological study of those individuals in whom this disorder is a potential complication.

IV. Heart Block

One of the main obstacles to successful direct vision repair of intracardiac defect has been the development of heart block at the time these defects were repaired. The appearance of this dissociation in atrioventricular rhythm was attendant with almost 100 per cent mortality in the immediate post-operative period. It was particularly prone to occur with those lesions which require extensive suturing in the region of the conduction elements of the myocardium. The onset of heart block with its attendant inadequate output immediately gives rise to a vicious circle of progressively deficient oxygenation with deterioration and death.

Initially the use of Isoproterenol Hydrochloride to boost cardiac output had served to salvage some patients who otherwise would have expired before they were able to spontaneously revert to normal sinus rhythm. More recently the innovation of implanting a very minute electrode into the myocardium of the right ventricle and attaching it to an electrical stimulator which can be regulated as to rate and voltage has served to decrease the mortality of this complication even further, and removed a great deal of the anxiety and danger associated with those operative procedures necessitating extensive suture of the ventricular septum. A refinement consisting of a very small electrical stimulator (pacemaker) constructed on a scale comparable to a small transistor radio, which can be worn by the patient for variable periods of time in the post-operative phase, has contributed greatly to the successful management of this much feared complication.

V. Elective Cardiac Arrest

The desirability of having a quiet dry heart while operating within its chambers is widely accepted. This can be readily achieved by excluding the heart from the general circulation (after the heart lung machine is in operation) and perfusing the coronary arteries with potassium citrate or acetylcholine solutions. Generally about thirty minutes of arrest with good recovery can be achieved.

Under some circumstances potassium arrest can be very difficult to reverse. This has been found to occur in cases with very large bulky hearts such as one sees in cases of acquired aortic stenosis. In these cases retrograde perfusion of the myocardium with arterialized blood pumped through the coronary sinus has been employed. More recently selective rapid cooling of the heart (while the body is maintained at normal temperature levels) has been tried. This permits the cold, slowly contracting heart to be excluded from the extracorporeal circulation for prolonged periods. Following rapid rewarming of the heart (by releasing the aorta into the general normothermic circulation), a satisfactory heart rate would appear to be more readily achieved.

The Lungs

Primary Lung Cancer

Surgical resection remains the only recognized method of treating this disease. Although the overall results in the management of cases of lung cancer (operable, non-resectable and inoperable) continues to present a low five year yield, (5-8 per cent), the number of survivors in resected cases is not as dismal as might be supposed (being reported as high as 30-35 per cent). There has been increasing recognition that under selected circumstances lobectomy rather than pneumonectomy in cases of bronchial cancer can be therapeutically acceptable or even the operation of choice.

Reports on exhaustive pathological studies have demonstrated that in many resected or autopsy specimens from individuals with bronchogenic cancer there is frequently more than one primary mucosal lesion. These are usually at the carcinoma in situ stage, may be situated bilaterally, and cannot be considered as a form of mucosal spread. Furthermore the transitional stages between a normal mucosa (that is, metaplasia and atypia) are not uncommonly found at routine autopsy in heavy smokers who have died of other causes. A further pathological facet has been the report that the careful search for blood vessel invasion in a resected specimen is of much more prognostic significance than the presence or absence of regional lymph node involvement.

Considerable controversy persists with regard to the operation of radical pneumonectomy. This consists of an incontinuity mediastinal pleurectomy, lymphadenectomy and intrapericardial control of the bronchovascular structures. The debate concerns whether this extended type of resection has anything to offer the patient over the conventional intrapleural operation. Reports of more long term survivors following the radical procedure have not been forthcoming and if the pathological finding designating blood vessel invasion as the more significant feature in prognosis is valid, it may be time to re-assess the premise that in general pneumonectomy is the treatment of choice in this disease.

A most interesting clinical assessment and follow-up of patients who on routine chest film are found to have a solitary nodule (coin lesion) is available. The conclusions of these studies suggest that, except where extensive or concentric calcification in the coin lesion can be demonstrated, the hazards of prolonged observation are greater than those of diagnostic thoracotomy. The single most characteristic feature of these shadows is that they have no typical history and are, with few exceptions, not amenable to positive diagnosis by any means short of histologic sectioning. Pathological studies would indicate that as a group one-quarter to one-third of them will turn out to be malignant, this figure being revised upward where the series consists of candidates who are predominantly male and over 40. Lastly, follow-up figures have shown that where a lung cancer is discovered at the coin lesion stage and an appropriate resection carried out, a five year survival of approximately 75 per cent can be achieved.

More emphasis should be placed on cytological examination of properly collected sputum samples in patients with persistent cough and a negative chest film. Careful instruction of office patients can yield satisfactory sputum samples which when examined by a trained cytologist can be as helpful as bronchoscopy. The latter in itself often fails to yield a positive diagnosis in cases with negative chest film. It is suggested that we should pay more attention to sputum (which can be collected in patients with non-productive coughs by preliminary warm saline nebulization) much as we have come to appreciate the value of routine cervical smears in the detection of early cancer of the uterine cervix.

Summary

It would appear that the significant advances in cardio-pulmonary surgery in 1958 have resulted from a broader application of the developments of the immediately preceding years. In its simplest terms this has been an outgrowth of the more extensive clinical use of methods of cardio-pulmonary by-pass with concomitant open heart surgery. Although these methods will be further refined, they have in some disorders reached a degree of perfection wherein the failure of their application

in order to cure or alleviate suffering in the various forms of heart disease might well be considered improper. The associated problems in many cardiac patients such as pulmonary hypertension, prosthetic valve replacement, endocardial fibroelastosis, heart block, etc. show continued promise. More recent progress in the surgery of pulmonary disorders would be directed primarily to a more concerted effort for earlier diagnosis of bronchogenic malignancy.

Paediatrics

Paediatrics: 1958

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The paediatric picture has changed vastly over the last decade or so. Many diseases that were commonly seen have virtually disappeared. Deficiency diseases are a rarity with the exception of the occasional case of scurvy. Bacterial infections have been "conquered" by newer and more powerful antibiotics although the antibiotic resistant staphylococcus has made its appearance and still rears its ugly head too frequently for comfort. Diphtheria and whooping cough are seldom seen thanks to wide-spread immunization, and the benefits of poliomyelitis vaccination are already evident in the reduction in the number of paralytic cases. Streptococcal infections are less frequently followed by rheumatic fever and acute nephritis because they can now be adequately treated with penicillin, although a change in the virulence of the organism may be partly responsible. Great advances in cardiac surgery make the exact diagnosis of congenital heart disease during the life extremely important, cardiac catherization and angiocardiography are now essential diagnostic aids. The biochemists have identified many of the chemical pathways of normal metabolism, and specific enzyme defects have been found to account for some of Garrod's "Inborn Errors of Metabolism." It is clearly impossible to give a complete picture of present day paediatrics in this short paper, and all we can do is to touch on a few aspects to indicate present trends of thought and investigation.

Prenatal Factors Causing Childhood Disease

It has been known for centuries that maternal syphilis may produce disease in the newborn child. However, it was the observation of Gregg in 1941 that severe congenital abnormalities occurred in children born to mothers who contracted rubella during early pregnancy that gave greater impetus to the study of prenatal factors in the causation of childhood disease. Gregg's work in Australia was confirmed in many other countries, but the risk of a congenitally deformed child being born to a mother who develops rubella during the first trimester of pregnancy, is not now considered to be as high as was originally estimated, and is probably about 10 percent. Susceptible women exposed to rubella in early pregnancy should be given gammaglobulin.

Several other maternal diseases are now known to produce effects in the newborn child. Intrauterine infection with toxoplasmosis may produce hydrocephalus, choroidoretinitis and other abnormalities. Maternal coxsackie infection shortly before delivery may give rise to neonatal myocarditis. Diabetes mellitus in the mother is one of the factors predisposing to hyaline membrane disease, a condition with a high mortality, the exact nature of which remains an enigma.

Polyhydramnios, which is said to be present when there are more than two litres of amniotic fluid, in the absence of obvious maternal causes such as diabetes, toxaemia or obesity is associated with abnormal foetuses in about 50 percent of cases. The abnormalities found are those which give rise to abnormal deglutition or abnormal functioning of the digestive tract such as anencephaly, and high alimentary obstruction. A baby born to a healthy mother with polyhydramnios should be carefully watched for the first sign of alimentary obstruction and oesophageal atresia may be diagnosed within minutes of birth if the catheter is passed into the oesophagus. Conversely oligohydramnios may be an indication of foetal renal agenesis.

Prenatal hormonal influences may result in endocrine abnormalities in the newborn. Non-adrenal pseudohermaphrodites have been born to mothers with androgen producing tumours (arrhenoblastoma), and similar abnormalities have been caused by treating mothers for habitual abortion with the synthetic progesterone compounds 19-nortestosterone and 17-ethinyl-testosterone. Metabolism of both these substances may result in androgenic intermediate products which masculinize the external genitalia of the female foetus during the formative period. Testosterone proprionate given for vomiting in early pregnancy has also produced the same genital abnormality.

Any discussion of noxious prenatal factors must include reference to the hazardous effects of radiation. Excessive exposure of a pregnant woman to radiation has been known for many years to cause congenital malformations in the child. It has recently been suggested by Stewart and her

colleagues that even diagnostic x-rays in pregnancy may result in a greater incidence of neoplastic disease including leukaemia in the children born to mothers who have been so irradiated. Another fact which came out of the enquiry was that advanced maternal age appeared to increase the risk of leukaemia and may partially explain why this disease and mongolism tend to be associated. While on the subject of radiation and its harmful effects it is worth mentioning that radiation of children for "thymic enlargement" has resulted in leukaemia and thyroid cancer later in life. Thyroid cancer has also been produced by incidental radiation of this gland during treatment by x-rays or radium for cutaneous lesions of the head and neck.

Virus Infections in Childhood

During the past year the medical literature has contained an impressive number of articles describing virus diseases in infants and children. Two examples of viruses which have received the greatest attention in recent years are the Coxsackie and Echo groups.

Echo Viruses

ECHO is an abreviation of enteric cytopathogenic human orphan, so called because these viruses were first isolated from the gastrointestinal tract of healthy humans and their exact significance was unknown. This frustrating situation did not last long, we know now that the clinical picture produced by these viruses, of which there are at least 19 different types, is extremely variable.

The spectrum of ECHO infections ranges from mild disease such as enteritis or a rubella-like illness to a clinical picture closely simulating meningococcal septicaemia. ECHO viruses may cause aseptic meningitis, many cases of which in the past have been labelled non-paralytic poliomyelitis.

The milder clinical syndrome caused by ECHO type 9, is of particular interest to the general practitioner. It is a common condition in the warmer months of the year and is characterized by fever, mild coryza, sore throat, myalgia, cervical, occipital or generalized lymphadenopathy and a rash which consists of a discrete pink macules mainly on the face and trunk closely resembling rubella but occasionally confluent. The illness may last from two to 14 days with varying degrees of constitutional upset. No doubt the milder form of this exanthem explains the oft obtained history that a child has had rubella twice.

The Coxsackie Virus

The Coxsackie viruses have been recognized since 1948. Two main groups have been identified; Group A known to be responsible for herpangina, and Group B which causes epidemic myalgia (Bornholm Disease). Recent work has shown that the pathogenicity of these viruses is much greater than previously suspected. It is now recognized that Coxsackie virus infection may masquerade as non-paralytic poliomyelitis and can even cause paralytic disease identical to poliomyelitis in every respect. Coxsackie B infection is particularly lethal for the newborn infant and at least 25 fatal cases of myocarditis, often associated with encephalomyelitis, have been recorded from various parts of the world. There have also been reports of myocarditis and pericarditis in older children and young adults, but fortunately these cases have a much better prognosis.

Other Viruses

The newborn and the premature infant seem to be particularly susceptible to virus infection. A recent interesting observation is that the "stuffy nose syndrome" of premature infants is caused by the synergistic action of adenovirus type 1 and staphylococcus pyogenes. Neither of these agents alone will produce the syndrome. With this condition the baby has a clear watery nasal discharge but no constitutional upset. Another less common but more serious disease seen in the newborn is cytomegalic inclusion disease. This produces encephalitis, jaundice, purpura, choroidoretinitis and intracerebral calcification. If the child survives it is left with severe mental and physical retardation. It is thought to be due to prenatal infection by the salivary gland virus, which is probably a normal saprophyte of the adult salivary glands. This condition may be diagnosed during life by finding cytomegalic inclusions in epithelial cells from the urinary and gastro intestinal tracts.

Virology is a rapidly advancing science. During the last few years many new viruses and disease syndromes caused by viruses have been recognized. The work continues and future progress will further widen our diagnostic scope and will one day provide us with effective weapons to combat those diseases.

Hypertonic Dehydration

An infant with diarrhoea loses water and salt via the lungs, sweat, urine and stools. This may result in a loss of water in excess of salt leading to hypertonicy of the body fluids. The kidney can correct this imbalance by excreting a concentrated urine, that is a urine which contains electrolytes in excess of water as compared to the plasma.

A dehydrated infant's ability to do this is handicaped by the fact that the infant kidney cannot concentrate urine to the same extent as an adult and therefore requires a greater supply of water to excrete an electrolyte load. Any factors which interfere with this mechanism will lead to the development of hypertonic dehydration. Such a state is said to exist when the serum sodium is greater than 150 millequivalents per litre.

In practice the development of hypertonic dehydration is encouraged by two main factors: 1) the

speed and magnitude of the fluid loss, and 2) the electrolyte content of any fluids administered to the patient.

If an infant loses fluid rapidly from the body it becomes haemoconcentrated. This has the effect of stimulating the secretion of aldosterone by the adrenal gland. Aldosterone is a powerful salt retaining hormone which causes salt retention by the renal tubules. We have already stated that a dehydrated infant must be given fluid in excess of electrolyte if he is to excrete a high electrolyte load. The prescribing of a strong electrolyte solution will impair this compensation. Recently it has become common practice to administer salt solutions, or multi-electrolyte solutions such as "Lytren," to dehydrated infants in an attempt to correct any electrolyte deficits. The principle is a good one, but in practice, if the circumstances are right, it leads to yet another iatrogenic disease, because the electrolyte load is too great.

Hypertonic dehydration is much more serious than hypotonic dehydration and more difficult to treat. These infants are extremely ill, dehydrated and their subcutaneous tissues have a boggy oedematous feel even though dehydration is present. The haemoconcentration leads to an impaired peripheral circulation, and mottled cyanosis is evident. The blood pressure is usually low or unrecordable. Oliguria or anuria is always present and convulsions often occur. Many cases end fatally and C.N.S. sequelae have been reported in survivors.

Treatment is by extremely hypotonic solutions intravenously which must be administered very slowly in the initial stages. This is because the haemoconcentration and hypotension may cause renal damage and overhydration can rapidly take place if kidneys fail to recover. Another problem in therapy is the fact that cerebral tissues retain salt much more avidly than other organs. This means that when rehydration is undertaken the cerebral cells take up fluid excessively causing cerebral oedema and severe convulsions. An additional method of treatment which one might consider is an attempt to inhibit aldosterone secretion by using aldosterone inhibitors or plasma expanders such as intravenous salt-free albumin.

During the last 12 months at the Children's Hospital many cases of this condition have been seen and it is common to elicit a history that strong salt containing solutions have been administered orally prior to admission.

Radiology

Recent Advances in Cardio-Vascular Radiology

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This article is written in an endeavor to give some perspective to work carried out in the last year or two, discussing briefly some of its more interesting features. The field of cardio-vascular radiology has been very stimulating, and is keeping pace with clinical and surgical advances in this field.

Corrected transposition of the great vessels of the heart, an entity long recognized by the pathologists, was only recently described by clinicians and radiologists. Anderson, Lillehei and Lester, from the University of Minnesota Hospitals, presented a review of 17 cases of corrected transposition, to point out diagnostic features and surgical aspects.

Corrected transposition of great vessels may be simply defined as the condition in which the aorta arises anteriorly from the left-sided ventricle and receives oxygenated blood, and the pulmonary artery arises slightly posteriorly and medially from the right-sided ventricle, and receives de-saturated blood. The great vessels arise in a side-by-side manner and course upward without crossing one another in the usual manner. There is inversion of the ventricles and atrial ventricular valves, that is, the anatomical left ventricle lies on the right side and supplies the pulmonary artery, and the anatomical right ventricle lies on the left side and supplies the aorta. There is typically an inversion of the coronary arteries which, coupled with the transposition of great vessels, results in the passage of large coronary vessels across the anterior aspect of the right-sided ventricle. The coronary arteries are not only usually inverted, but also transposed. In 6 of the 17 cases studied, there was an associated ventricular septal defect. Atrial septal defect, pulmonary stenosis and patent ductus arteriosus were found to be present in the others.

The roentgen appearance of the heart depends upon the associated defects. The upper left border of the heart usually appears as a gentle convexity, representing ascending aorta, and having a more gradual slope than is usually associated with pulmonary artery of normal heart. It may be flat or even concave, despite the presence of left-to-right shunt. This variability in convexity and concavity is due to variable deviation of the aorta as it approaches the crest of its arch. In some cases the medially placed main pulmonary artery causes an indentation of the barium-filled oesophagus in the postero-anterior view. The left pulmonary artery arises much more medially than normal, but similar appearance is often seen in uncomplicated

ventricular septal defect. Angiocardiography is the simplest and most valuable diagnostic procedure available for the identification of corrected transposition. In antero-posterior projection the main pulmonary artery is located medially and the aorta forms the upper left border of the heart. Because of absence of the usual right ventricular infundibulum, the right-sided ventricle presents an unusual tail-like configuration directed towards the cardiac apex. Also diagnostic is the anomalous course taken by the cardiac catheter in entering the medially placed pulmonary artery. The latter most frequently however, cannot be entered at cardiac catheterization[1].

A new approach to radiological diagnosis of congenital heart disease in children has been described by a team from the University of Minnesota Hospitals.

A division of the patients into groups dependent on the appearance of the pulmonary vasculature was found to be most rewarding, and sub-groups based on other characteristics were also outlined. In the great majority of cases such an analysis of the roentgenological features, in conjunction with other simple clinical data will yield a working clinical diagnosis. For precise analysis of anatomic and physiological features, other procedures, such as angiocardiography, retrograde aortography and cardiac catheterization, may be indicated[2].

Durant, Stauffer and associates at Temple University conducted experiments on dogs and studies on humans, with pericardial and rheumatic heart disease by using intravenous carbon dioxide for visualization of cardiac structures. Some success was achieved in disclosing pericardial effusions and constrictive pericarditis. The normal cardiac valves were found to be patent to gas. No cases of cyanotic heart disease had to date been selected for this procedure[3].

Angiocardiographic aspects of constrictive pericarditis were described by Figley and his associates. They found that normally the right heart border rarely exceeds 4 mms. in width. It varied from 4.5 to 8.5 mms. in constrictive pericarditis, and 10 to 15 mms. in pericardial effusion. Other cardiographic signs of constrictive pericarditis are straightening and rigidity of right atrial border, superior and inferior vena caval dilatation, slowing of the intra-thoracic circulation, and right ventricle of normal or small size, and slight left atrial dilatation[4]."

Effects of myocardial infarction on the size of the heart have been recently studied in numerous centers. In a group of 489 patients studied by Weiss, who survived an acute myocardial infarction for at least two months, 25 showed cardiac enlargement though the heart had been of normal size at the onset of infarction. In 15 of the 25 patients there were commonly accepted causes of enlargement, viz., hypertension, aortic stenosis, cor pulmonale. In only 2% of the total, enlargement could have been due to infarction. All patients in this group had associated congestive heart failure. Multiple myocardial infarctions did not otherwise cause cardiac hypertrophy. It is believed that such cardiac hypertrophy develops with congestive failure, which in turn results from complication of myocardial infarction such as myocardial aneurysm or extensive myocardial fibrosis, or both.[5]

In some selected cases, roentgen kymography may be of value in diagnosis of myocardial infarction, particularly of the antero-lateral wall of the left ventricle, by showing paradoxical movements of the segment involved.

Studies of the chambers of the left heart, as well as mitral and aortic valves by injecting contrast medium directly into left atrium or ventricle have been carried out in Europe and North America, but have gained little popularity. In the congenital group, with left-to-right shunt, other methods are by far superior. In the acquired cardiac group, it appears to be of very little value in aortic lesions, but may be of help in establishing the diagnosis of mitral insufficiency.

In some instances, infundibular stenosis or Tetralogy of Fallot may develop with ventricular septal defect. Formation of infundibular stenosis and decrease in left-to-right shunt appears to be a natural protective mechanism limiting the pulmonary flow of blood. This transformation may account for the improvement in health which is often observed after the first year of life. The frequency of alteration of the isolated defect is not known. However, the possibility of such transformation should be considered in the management of patients with a ventricular septal defect.

Gasul and his associates established diagnosis of a large isolated ventricular septal defect in 10 patients during the first year of life. Re-examination after 3 to 5 years revealed infundibular stenosis in addition to the septal defect in 2 patients. Left-to-right shunt was reduced in these children. Roentgenograms indicated decrease in the cardiothoracic ratio, pulmonary vascular markings and pulsations of the pulmonary artery were less prominent than at the first examination. Oxygen saturation of peripheral arterial blood was less than at the time of initial study.

Tetralogy of Fallot, with cyanosis and predominant right-to-left shunt, was observed in a third child. In the remaining seven patients, the isolated defects persisted[6].

As surgery of the arteriosclerotic aorta and its lower branches is becoming more common, it behooves the radiologist to be well versed in the subject of aortography and arteriography. The findings based on these examinations are important in deciding upon and planning the surgical approach. Opacification of the thoracic aorta may be indicated to study co-arctation, patent ductus

arteriosis, aortic-pulmonary window, differentiation of aneurysms and tumors, and to determine vascular involvement by tumors. The procedure of aortography should not be considered a simple study, and there should be close collaboration between physicians of various specialties concerned in this field of study. The responsibility of decision as to whether the information gained justifies the risk of examination, should rest upon the radiologist.

At Johns Hopkins Hospital, a total of 13,207 abdominal aortographies were collected from replies to questionnaires sent to 450 radiologists and urologists. There were 37 fatalities attributable to the procedure, a mortality rate of 0.28%. In addition, 98 (0.74%) serious non-fatal complications occurred. Twelve fatalities and 27 serious non-fatal complications occurred due to injury to kidneys. The risk of injury to kidneys depends primarily on the quantity of contrast medium reaching them. In one-third of serious injuries, the injection was made either directly into renal artery or into the aorta at the origin of renal artery. Urological damage with 5 fatal and 24 non-fatal complications was an important hazard. The danger appeared to be increased by the use of spinal and general anaesthesia, excessive injections of medium, and by the proximity of the needle tips to the major anterior radicular artery, usually at the level of L 2[7].

A similar survey was conducted from Stanford University Hospitals, and a total series of 1,706 thoracic aortographies were collected from numerous countries. The report showed that most of the deaths and severe reactions appear to be associated with cerebral damage, although severe renal reactions were also noted, as were cardiac and respiratory disturbances. Twenty-nine deaths occurred in the total series. This represents a mortality rate of 1.7%, and includes all types and concentrations of media[8].

Although arteriography is a well-established procedure, it is not entirely without hazard, and numerous complications may occur. More careful consideration of the indications and contra-indications for arteriography, more meticulous attention to technical details, and full realization of the responsibilities will lessen the dangers and at the same time endow the procedure with even more significance than it possesses today. The two goals of arteriography are safety to the patient and good diagnostic study. Many workers prefer an operative approach, with puncture under direct vision for vessels other than the abdominal aorta, because of danger of repeated attempts and blind puncture of medium-sized arteries in ischemic limbs. Percutaneous trans-lumbar aortography with introduction of needle below the origin of renal arteries appears to be safer in patients with ischemic lower extremities than direct femoral arteriography, since less arteriospasm of the involved smaller vessels occurs. Arteriography is indispensable in choosing suitable candidates with arteriosclerosis for direct placement grafts, bypass anastomosis, and thromboendarterectomy. The ideal candidates for surgery are those with segmental block above the popliteal artery, in whom the collaterals fill a patent main trunk distal to the block. Frequently the arterial obstruction is high, even within the aorta, and a trans-lumbar aortography is then preferred. If the level of the block is known to be below the common femoral, direct femoral arteriography may be employed.

Arteriography is of value in planning the surgical approach to an aneurysm, particularly in determining the presence of main trunk involvement. Serial angiography is utilized in demonstrating multiple small arterio-venous communications of congenital type. Most simple arteriovenous fistulas can be evaluated without arteriography. Although the procedure is generally contra-indicated in peripheral arterial embolism, it has been found of value in certain instances where the embolus has lodged distal to the origin of profunda branch of the common femoral artery. The contrast studies in patients with spastic vascular syndromes are usually contra-indicated. One case however, was described by Wagner[9] where diagnosis of arteriospasm as the cause of an episode mistaken for popliteal embolism was made possible by arteriography. Patency of atrial anastomosis can usually be determined by ordinary methods, and arteriography seldom indicated.

In addition to occlusion of arteries of lower extremities in association with isolated arteriosclerosis, arteriosclerosis of syphilis and diabetes, or arteriosclerosis which is complicated by hypertension, the arterial disease sometimes is manifested by mycroaneurysm formation and by clubbing of the vessels. These phenomena consist of small out-pouchings on the side of the vessels or of dilatation at the ends of small vessels[10].

It has been brought more and more to our attention how useful angiography can be in determining the nature of bone and soft tissue tumors, benign or malignant, in ascertaining this and ascertaining the extent of tumor.

Rabiotti and Malchiodi followed the criteria of previous workers such as Dos Santos, Farinas, Inckan, Colunella and Fontaine, to determine if the tumor of bone or soft part is benign or malignant. The signs of malignancy are: 1. increased vascularity with vessels penetrating the tumor mass; 2. uniform vascularity throughout the tumor mass; 3. pooling of the contrast medium within the tumor; 4. direct venous channels draining the tumor without interposing arterioles or capillaries; 5. a vascular pattern which follows the direction of growth of the tumor by the new blood vessels; 6. displacement of the normal arterial tree; 7.

newly formed arteries supplying the tumor with a triangular appearance entering the neoplasm; 8. an abrupt termination of the normal blood supply at the site of tumor formation. It seems that its greatest advantage lies in the fact that the extent of the tumor can be studied, thus being most helpful in planning the treatment. In rare instances, it can be even a better method than biopsy by which the true nature of the tumor can be identified[11].

Several methods of coronary arteriography have been recently developed. One described by Thal and Lester[12] is relatively simple, and appears to be quite promising. A cardiac catheter is threaded into the ascending aorta, some 5 cms. above the sinus of Valsalva under fluoroscopic guidance, with the use of image amplifier. 40 ccs. of 76% Renografin is rapidly injected. Multiple films over a short space of time are imperative to outline the entire course of the coronaries. There were no important reactions in 18 patients, ranging in age from 17 to 76 years, and the procedure was successful in 15. The films obtained yield information in regards to the calibre, patency, course, and uniformity of the right, the left anterior descending, and the left circumflex coronary arteries. In addition, anastomotic channels are demonstrated in the presence of occlusion of one of the branches noted[12].

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Pathology

Recent Advances in Pathology: 1958

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As in many fields, progress occurs precipitously in particular subjects during a brief span of time. This may come about through a coincident awareness of a solution to a problem, or by the invention of a new machine or the new application of an old machine. In medicine, mechanical inventions play a small part in the advancement of medical knowledge. Rather, evidence is gathered pro and con a subject by the investigation and analysis of facts as provided by case histories of disease. Information derived by this painstaking process is usually a distillation of the work, thought and effort of many. Rarely in this day of specialization can it be said that one man is responsible for the production of a work of art. In this brief report on progress in Pathology, we hope to bring to your attention new facts and information published during the last year which in our opinion represents comprehensive analysis, a major departure in approach or a reappraisal of facts once considered inviolable in their integrity.

Buerger's Disease

The first paper for discussion falls in the latter category. It is entitled "A Reconsideration of the Pathogenesis of Buerger's Disease" by Ira Gore and S. Burrows[1]. The authors reviewed the pathologic findings in three autopsied patients with this disease as well as seven additional amputated specimens. As a result of their inquiry, they suggest that Buerger's disease as an entity does not exist at all. They feel that the lesion is primarily an arterial thrombosis occurring in peripheral vessels of young individuals because of an associated hyper-responsivity of these vessels to vasospastic stimuli such as tobacco. The lesion starts distally in small arteries without evidence of primary arterial inflammation. The thrombosis progresses by means of retrograde extension to the larger proximal channels where, with time, the thrombus is incorporated into the intima, thereby accounting for the augmented atherosclerosis.

The lesions which have been reputed to be characteristic of Buerger's disease are thus felt to be merely an expression of primary arterial thrombosis with attempts at repair. The involvement of nerve and veins in the inflammatory reaction are the result of positional, that is, muscular and peripheral, involvement.

Diabetic Gangrene

Continuing in a similar vein, E. T. Bell[2] has reviewed 2,130 cases of diabetes mellitus over 20 years of age with regard to atherosclerotic gangrene of the lower extremities, comparing them to non-diabetic persons in similar age groups. He found that 80% of atherosclerotic gangrene in women

results from diabetes, while in men under eighty years of age, 66% of cases was due to diabetes.

Gangrene in diabetics was not related to the duration of the diabetes or the requirement of insulin, but rather to the presence of infection which seemed to precipitate gangrene.

Average survival after amputation was longer in diabetic than non-diabetic patients, probably related to the fact that generalized atherosclerosis in diabetics was not as advanced as it was in those requiring amputation because of pure atherosclerosis.

Atherosclerosis

Holman, McGill, et al[3], in an investigation of the natural history of atherosclerosis, devised a means of staining fatty deposits in human aortas by direct application of a fat stain to the gross specimen. They divided the lesions discovered into fatty intimal deposits and fibrous plaques, the latter being considered the late converted stage of a lipid deposit.

The aortas of 526 people, aged 1 to 40 years, were studied over a five year period. 162 were from whites, 299 from Negroes. All patients over 3 years of age had minimal lipid intimal deposits, the percentage of surface involvement increasing slowly until the age of 8 years. At this time the Negro cases showed a precipitous rise in surface involvement. The whites increased about the age of 13 years, but did not reach as high a peak as the Negro.

Fibrous plaques began to appear in the second decade, but did not increase appreciably until the fourth decade. By 40 years of age, only 20 per cent of the area covered by fatty streaks had been converted into fibrous plaques.

The aortic ring was the first region of the aorta to be the seat of fatty streaks, but it was the descending thoracic and particularly the abdominal portions which gave the distinctive pattern of increasing lesions between 8 and 18 years. Fibrous plaques also developed most extensively in the abdominal portion.

There was sufficient fatty change to serve as the basis for all the fibrous plaques encountered at later ages, and the data indicated that it requires at least 15 years for the conversion to take place. The rate of development of fibrous plaques and fatty streaks is reversed in the white as compared to the Negro, suggesting that whatever initiates the process differs from whatever carries it on to produce clinical manifestations.

The data reported does not support the concept of diet as the principal factor in atherogenesis. The rapid rise in lesions during the years of puberty suggest a relationship to the changing hormonal activity encountered during this period.

Pulmonary Infarction

One of the more unfortunate complications of any illness is a pulmonary embolus. How frequently this occurs in conditions other than heart failure is explored by R. M. Torack[4].

It is accepted that to produce a pulmonary infarct there must be a compromise of both pulmonary and bronchial circulations. Pulmonary vascular congestion plus occlusion of the pulmonary artery, most often embolic, has been the commonest cause of such compromise. Pulmonary vascular congestion is almost always the result of left sided heart failure, hence pulmonary infarcts do not ordinarily occur in the absence of congestive heart failure.

An analysis of 118 cases of pulmonary infarction revealed 27% to have occurred in the absence of heart disease and in the absence of congestive heart failure. It was found that congestive heart failure was the most frequent predisposing factor in the development of pulmonary infarction. Other lesions which were also found to predispose to infarction were pleural effusion, pneumonia, atelectasis and multiple emboli through the production of shock. Each of these conditions were of such a nature and degree that the pulmonary vascular flow was impeded. The stagnant collateral circulation could not overcome the additional barrier imposed by a pulmonary embolus and an infarct resulted.

Endocardial Fibroelastosis

In an investigation into the etiology of endocardial fibroelastosis, Dyson and Decker assessed the lesion as found in adults[5].

In their paper, nineteen adult cases of ventricular endocardial fibroelastosis in a variety of cardiac diseases are presented. They are divided into five groups: idiopathic cardiac hypertrophy, miscellaneous, hypertensive, arteriosclerotic and valvular cases.

Endocardial gross and microscopic lesions were similar in all five groups. Progressive congestive heart failure was the outstanding symptom in all groups, averaging 23 months in duration. Males outnumbered the females by a ratio of more than 3:1.

In none of the cases was there a cardiac or a non cardiac cause evident for the endocardial lesion. They conclude that fibrous thickening of the endocardium in the adult is probably a compensatory endocardial response to underlying myocardial weakness resulting from diverse causes. Elastosis is characteristically found in scars subjected to fluctuating and rhythmic stresses.

"Endocardial sclerosis" in the specialized muscular artery called the heart, corresponding to arteriosclerosis in the other arteries, is suggested as a proper name for this lesion. It is probably commoner in the adult than has been appreciated.

Serum Sickness

The rising importance of allergic processes in disease is reflected in the increasing numbers of papers devoted to the subject. One of the more

important disease syndromes resulting from antigen-antibody reactions is serum sickness. The mechanics of serum sickness are expertly analyzed by Dixon, et al, using I^{131} labeled bovine gamma globulin in rabbits[6].

It was found that the initiation and development of the morphologic manifestations of serum sickness

1) closely parallel the increase in rate of antibody formation,
2) occur while antigen-antibody complexes presumably capable of inducing inflammatory and anaphylactic responses are present in the circulation,
3) are accompanied by an almost simultaneous localization of antigen and probably antibody in the sites of the lesions.

It was also found that regression of the lesions of serum sickness

1) follows the disappearance of readily detectable circulating antigen and antigen-antibody complexes.
2) parallels a decline in rate of antibody production.
3) is accompanied by the disappearance of antigen from sites of the lesions.

A mechanism is proposed by which the interaction of antigen and antibody might cause the development of the lesions of serum sickness:

1. As antibody begins to be formed it combines with antigen in an antigen-excess environment and forms soluble complexes which increase in amount with the increase in antibody synthesis until all antigen is eliminated.

2. These complexes circulating in the body fluids are presumably capable in initiating anaphylactic and inflammatory responses in the host.

3. Then, by means not yet known, these complexes initiate, and are localized in allergic inflammatory lesions in certain arteries and glomeruli. The precise position of the lesions might depend upon local physiological conditions at the time the complexes first appear.

4. The development of the inflammatory lesions and localization and concentration of complexes in them progress simultaneously, perhaps each enhancing the other.

5. Finally antigen and antigen-antibody complexes are eliminated from the circulation; then the lesions of serum sickness promptly burn themselves out and are repaired and in the process the antigen and antibody are catabolized.

Collagenosis

The relationship between disseminated lupus erythematosus, scleroderma and dermatomyositis are well known and recognized. In a unifying concept of the three diseases, based on the fact that a reactive affinity has been shown between gamma globulin and deoxyribonucleoprotein, derived from tissue cell nuclei, it has been suggested that the above disease processes occur following sensitization of the patient to either extrinsic or intrinsic nucleoprotein. It is further postulated that once established, the state of hypersensitivity may be maintained by the small amounts of nucleoprotein liberated as cells perish spontaneously or are destroyed by pathologic events.

Carcinoma in Situ

In the field of gynecology, a review[8] of 235 cases of carcinoma in situ by serial section technique revealed only 3% to have foci of early invasion, thus removing them from the class of Stage 0. The prognosis for all cases, whether in situ or showing early focal invasion, was the same when treatment was simple total hysterectomy, including a wide vaginal cuff. However, they warn that in those cases in which biopsy material shows definite invasion, the possibility of tumor involvement of lymphatics also exists. In such circumstances, the authors recommend individual case assessment, weighing the morbidity and mortality of the Wertheim hysterectomy or irradiation against treatment by simple hysterectomy. Their leanings toward the latter technique is evidenced by the last statement of their article, that simple total hysterectomy "may very well be adequate therapy in cases of focally invasive carcinoma of minimal histologic extent."

Placental Dysfunction Syndrome

In an analysis of the placental dysfunction syndrome[9], it is known that prolonged gestation can be associated with deleterious effects on the fetus. The placenta stops growing before term, its permeability diminishing after the 36th week of gestation. Placental infarction may cause diminution of fetal weight through anoxia and malnutrition. Examination of the adrenals of twelve infants with this syndrome revealed hemorrhagic and degenerative changes which probably represented precocious involution stimulated by inadequate placental function. The importance of premature involution of the placenta in prolonged or even normal gestation is a problem becoming recognized by obstetricians and pediatricians more and more, with no obvious solution yet available.

Penicillin-resistant Staphylococci

A survey was conducted to determine the incidence of penicillin-resistant staphylococci among children born in recent years as compared to those born prior to extensive hospital use of penicillin. Forty-five percent of the children under five were found to harbor penicillin-resistant staphylococci, in contrast to 18 percent of the children between 10 and 18 years of age.

Penicillin resistance of the staphylococci obtained was independent of previous penicillin experience. It is postulated that the majority of resistant strains recovered from the younger children are of hospital

nursery origin. The future value of antibiotics in treating staphylococcus infection may depend, in part, upon preventing newborn infants from acquiring resistant strains while in the hospital nursery.

Senile Keratosis

An interesting paper on the subject of "Senile Keratosis" has been published by Henry Pinkus[11].

A discussion of the normal proliferation of skin precedes the description of the pathogenesis of senile keratosis In the latter condition, basal cells which are primarily the regenerative source for normal skin, become replaced by cells which resemble prickle cells. A variety of patterns may then be produced, the epithelium being thin and atrophic or hyperplastic and acanthotic. The regular pattern of rete ridges and papillae is lost. The dermal-epidermal junction becomes straight or there are irregular buds that extend downward. There is a sharp margin between the area of senile keratosis and normal skin, the margin being slanted so that the outermost portion is wider than the base.

This condition is considered to be a precancerous lesion arising from one or more disturbed basal cells which may progress to carcinoma in situ or invasive carcinoma.

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Preliminary Notice

Post-Graduate Institute, March 25 - 26, 1959

A Post-graduate Institute has been arranged by the Departments of Obstetrics and Paediatrics of the University of Manitoba to be held in the Auditorium, Manitoba Medical College, on Wednesday and Thursday, March 25 and 26. The Main theme of the conference will be

"Problems of Mother and Baby at Term"

DR. HELEN WALLACE, Professor of Maternal and Child Health, University of Minnesota, formerly Director of Bureau for Handicapped Children, New York City, will be the guest speaker. She will speak on Perinatal Mortality and Congenital Malformations. There will be Round Table conferences and discussions on Toxemia, Placental Dysfunction, Erythroblastosis, Placenta Praevia and Neonatal Infections.

A detailed program will appear in the February issue of the Review.

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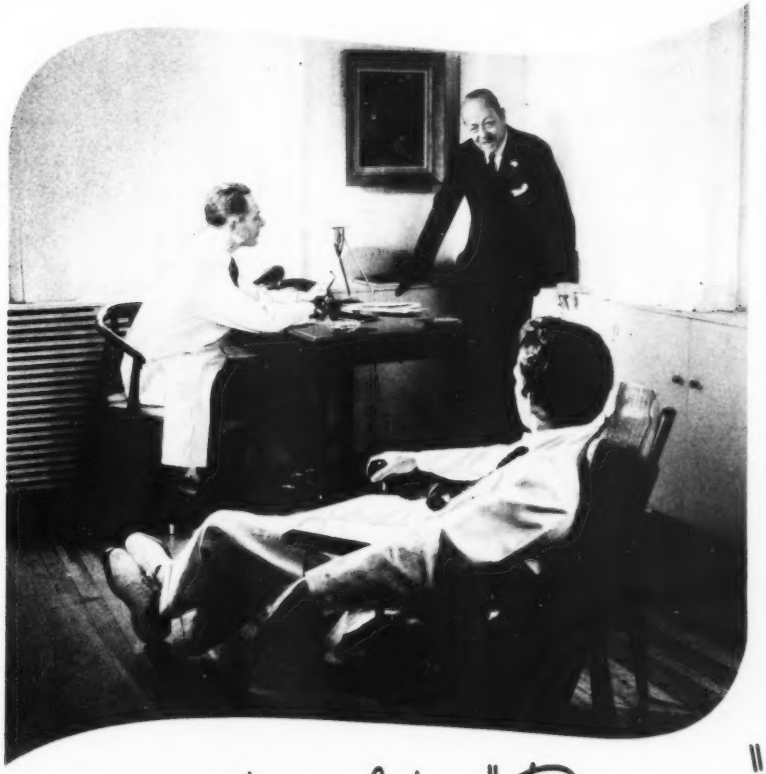

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Medical History

Philippe Pinel

A. T. Mathers, M.D.

If it were possible to question many thousands of the laity as to who Philippe Pinel was, there is no doubt that the result would be an acknowledgment, polite or otherwise, of complete ignorance and a corresponding lack of interest. Posing the same question to members of the medical profession at large, the result would be a bit better—perhaps a very few, after some memory searching, indicating uncertainty, might reply with another question: "Wasn't he the one who released the insane from their chains?" Even among psychiatrists one would very likely find few whose knowledge went further, unless for one reason or another, interest or curiosity had led them to investigate why the man Pinel holds an enduring place in the annals of their specialty.

I was interested in finding out how much attention had been given to this man in available publications in English. The Encyclopedia Britannica, 11th edition, allows him twenty lines in a half page column. In a survey of medical periodicals covering 30 years, 4 articles were discovered. In spite of the fact that this man's very nearly sole remaining claim to fame is the recollection of a single dramatic gesture, although one of lasting importance and motive, his really enduring claim rests on other grounds than this, and of these we shall speak presently. Pinel was a quiet, humble and sincere man, who no doubt would have been amazed could he have known that he would be remembered 200 years later for one thing undertaken by him and inspired by deeply rooted humanitarianism. Certainly no thought of fame motivated him. One believes that, if any thought of continuing recognition occurred to him, it was not based on this one act. Being a wise and thoughtful man he very likely gave little or no thought to the survival of his own patient and sincere efforts. He no doubt knew full well that renown is but a brittle, transitory and vulnerable thing:

"What of Renown when storms are done—
A faded foam flower on a weary wave."

Yet his renown does continue even if not in the plaudits of the world, far more enduringly because of his attitude to his life work, and in a method of approach to the problems of it that survive today in every mental hospital where adequate case histories, based on systematic observation and analysis are recognized as imperative procedures.

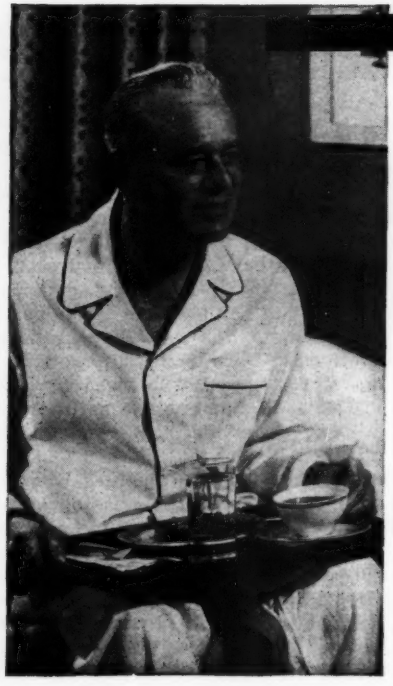
"What Charles Dickens did through his novels to arouse his fellow countrymen to certain abuses practiced by English officialdom, Philippe Pinel did in respect to the treatment of the insane in France and by extension of the principles he established, throughout the world — not only did he strike from these victims of mental disorder, the shackles that were regarded as an essential part of their treatment at that time, but he initiated those methods in dealing with mental illness that are the basis of most of our present day treatment of the insane and for the study of criminal psychology."

Let us first note the facts of Pinel's life. It is a record of hardship, severe trial and even danger met with unfailing courage and determination, climbing like the rising sun to a glorious zenith, slowly declining to the twilight in which the deeds of men are often bedimmed and forgotten.

The son of an impecunious physician, Pinel was born in 1745 at St. Andre, the Department of Tarn, France. His early education, strongly classical, was provided by private tutoring, and at 17 he entered the University of Toulouse. Here, in order to meet expenses he himself was obliged to tutor. At Toulouse his studies consisted of a furtherance of his early classical training, the Humanities generally and Mathematics — a program that might nowadays be paid more heed to in the preparation for life and work as a physician. His medical studies were not completed till he was 29. He then went to Montpellier, the seat of what was then perhaps the most renowned university of the period. At Montpellier he endeavored to establish a practice but, possibly because of his quiet retiring nature, he made a poor job of it and was obliged to turn to tutoring again in order to live. This kept him in fairly close relationship with the University and its students. There is recorded, of this period, an interesting episode that casts a revealing light on his bent of mind. He befriended a serious minded young student named Chaptel who, worried sorely about the great amount of work to be done and his slowness in achievement. To him Pinel said, "My young friend, it is urgent that I ask a slight favor of you. Please come to see me every day and let us read together a few pages of Montaigne, Plutarch and Hippocrates." This reminds us of the answer given by Thomas Sydenham to a student asking what textbook he could recommend, "Read Don Quixote."

After five years of a threadbare existence Pinel decided as many others, failing in a small community have decided, to try a large one where, of course, competition is keener than ever. He decided to go to Paris and did, trudging the entire way on foot—a distance as the crow flies, of nearly 500 miles. As might be expected the move was like jumping from the frying pan into the fire. Life was more than ever difficult. He brought along with him a letter to Cousan, an eminent geometrician and was advised by him and others to

Read before the Medical Historical Society.



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apply himself to the teaching of Mathematics. Although Pinel was in fact, a brilliant mathematician, this advice did not appeal to him at all. He had his mind set on Medicine as a career. However he found a place to live in the Latin Quarter and through dire necessity did some tutoring in mathematics. His spare time was devoted to studies in the application of Physics to Anatomy and Physiology, together with the abstracting and publishing of three volumes of the philosophical transactions of the Royal Society, and a translation of William Cullen's "Institutes of Medicine," a work that had greatly impressed him. This and other works led him to the conception of the patient as the best text-book, and this, one might say, was the guiding dictum of his whole life.

At first friendless and alone, he by his erudition carried with humility, gradually won the regard and interest of certain parties who had political influence and they recommended his appointment as physician to the King's aunts. This really wasn't much of a position, but it would have provided some much needed money. However, when he was introduced to his charges, he was speechless and exhibited so little wit or charm that they at once decided they would have none of him.

He was discouraged but retained his determination. Trying again and again to get an appointment as assistant in the hospitals of Paris he was finally admitted to the competitive examination, but was completely overshadowed by a towering military surgeon, who, knowing next to nothing, had a stentorian voice — and Pinel failed to secure the appointment.

Pinel was again naturally, discouraged but again not defeated. At about this time a young man whom he had befriended and who was depressed by the general state of affairs, wandered out into the woods and was found dead — a book of philosophy clutched in his hand. This young man's case had been rather poorly handled by the available psychiatrists or alienists as they were called. He had been in hospital and in visiting him, Pinel had made a first hand acquaintance with the grim type of care that such patients received. He managed to get himself accepted as a sort of volunteer assistant in the "Maison de Santè" of a Doctor Bonhomme. This experience coupled with what he already knew stood him in good stead when he finally received the all-important appointment later.

This was the time of the Revolution and Pinel found himself divided in mind about it. "The Revolution was not simply a sudden accidental upheaval directed toward a change of power. Those who, over a period, instigated it had in mind an intelligent, planned attempt to bring about a renovation and reformation of institutions that had deteriorated." Pinel was sympathetic toward their philosophy and motivation and during its first stage supported it as a quiet natured, thoughtful, erudite and humane man might be expected to do. With the second stage, replete with terrible excesses, he was profoundly disturbed. As a member of the National Guard he was obliged to attend the execution of the King and in a letter to his brother described the event with evident horror.

On August 17, 1793, through the influence of friends who knew well his qualifications and intense interest, Pinel was appointed to the Directorship of the Bicêtre. What he found there was described in the eulogy pronounced at his death by an eminent colleague.

"Vice, crime, misfortune and infirmity—the most varied and revolting diseases — all were heaped together and treated alike. The buildings were untenable. Men crouched there, covered with filth in cells of stone and cold, dripping, with little light or air and furnished only with a litter of straw, rarely renewed and soon infected — hideous lairs in which one would have hesitated to shut up the vilest animal. The insane, thrown into these sewers were at the mercy of their keepers, and these were often malefactors from the prisons. The wretched patients were loaded with chains and tied with ropes like convicts. The injustice of their treatment transported them with rage — despair and wrath inflamed their deranged minds and drew from them, night and day, cries and howlings that rendered still more dreadful the clanking of their chains."

This was the revolting sight that met Pinel. The public attitude in Paris during the Revolution fluctuated violently. At first those who shouted Liberty, Equality and Fraternity ran to the extreme of bursting into prisons and liberating the inmates who were believed to be the victims of the accursed tyranny. Later, suspicion was rife and anyone who was erudite, or even of average or better intelligence was suspect, and the time came when Pinel was thought to be harboring aristocrats and emigres in his institution. And as a matter of fact, he was. He was in this, more kindly than judicious. While he was no aristocrat at heart, he could not restrain his sympathy for them in the horrors that pursued them. An aristocrat or priest could go to the Bicêtre and get himself locked up in a cell which was much safer than being abroad in Paris. When the Guard came to take such persons away Pinel would insist that they were insane and refuse to give them up.

At a later date he himself was branded as an enemy of the people. The mob, howling for his death on the nearest lamp post, hustled the little man out and would have lynched him there and then, had not a former patient, one from whom he had ordered the fetters struck, grabbed him and carried him back into the hospital.

At one of the stages of public opinion when the Revolutionary authorities showed no inclination to

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pay attention to his pleas for betterment of the lot of his patients Pinel, after consultation with his lay associate in the hospital, Poussin, decided to press his case personally. The triumvirate of leaders in terror and bloodshed were Robespierre, St. Just and Couthon. Robespierre, "the seagreen incorruptible," was cold and harsh, St. Just, impetuously cruel, and Couthon, his mind no doubt embittered by a physical disability that crippled him. They were a vicious lot. Pinel dealt with Couthon who impatiently listened to his pleadings, while Pinel explained his plan to free approximately 50 patients of their chains and accord them the freedom of the grounds, assuming personal responsibility for the outcome.

"Citizen Doctor," said Couthon, "You have been suspected for a long time. This idea of yours seems about as foolish as any we have heard so far. You have charge of these patients. Just see that none of them get out. That's all we want you to do." Seeing that this did not satisfy Pinel, Couthon after a pause went on saying that in a week he would come to the hospital to see what Pinel really wanted to do. He did come as promised, and was taken into the wards where the pandemonium was so great neither Pinel nor Couthon could make themselves heard. The stench was terrible. One patient made a dash for Couthon, but was restrained. At the end of what very likely was a brief but salutory exposition such as this, Couthon asked Pinel if he really wanted to unchain these vicious beasts. Pinel replied that they were sick people and behaving very little differently from Couthon were he to change places with them. "Well," said Couthon finally, "Do as you please but I'm afraid you will be the first victim of your own presumption."

It was not long before Pinel had unshackled 53 patients and the result was in excess of what he had believed possible. There was peace where before there had been noise, abuse, filth and illness. Most of the patients cooperated and there are many pitiful stories of their expressed and unexpressed but plainly shown gratitude. He himself said, "The whole discipline was marked by regularity and kindness which had the most favorable effect on the insane themselves, rendering the most furious more tractable."

It was not long before he was one of the most deeply loved persons in Paris. The patients and the people of Paris who soon learned of what was going on, adored him.

A partially built munitions factory on the left bank of the Seine designed to replace one on the right bank that had been causing consternation because of a series of explosions, was altered and renovated and became the celebrated Salpétrière—its name suggesting its original purpose still clinging to it when it became a hospital. To it went Pinel and here he carried on his work of reform, continued his systematic approach to an understanding of his patients' ills, observing, recording and finally coming to a conclusion. There too he taught, bringing to his students not only the immense resources of his psychiatric experience, but also opening to them the broadest views regarding cause and effect in disease.

Perhaps we should digress briefly to glance back at the beginnings of both La Bicêtre and Salpetrière.

In the time of Louis XIII there were a number of hospitals scattered throughout Paris and his Majesty, no doubt on advice, decided to place them all under single management with the name "L' Hopital General." There was a governing board consisting largely of lawyers, including all the judges of Paris. Local management was in the hands of a Mother Superior with about 30 nuns assisting her. All were dedicated to aiding the poor and unfortunate. With the great variety of inmates—the sick, the insane, prostitutes and criminals—there was bound to be trouble, and at first Salpetrière was a place for incarcerating prostitutes only. But also within its walls was La Force Prison where many prominent people were immured during the reigns of Louis XIV and XV — the grim emblem of the Terror.

If this hodge podge of inmates was not enough, political machinations in the management added to the trouble. At first the directing sisters were conscientious women deeply devoted to their difficult task, but in 1749 the Sister Superior having died, the Board by a very close decision nominated as Sister Superior a woman named de Moison, whose only claim to the position was that she was of noble birth. Her only competitor, a Sister St. Michel, who had spent her life in the hospital and was well acquainted with its problems, was turned down because she was said to be of the wrong political party. Madame de Moison being a political appointee, felt quite secure. She was not interested in the patients, liked her place of residence and proceeded to have with her friends a pretty good time. Her quarters were the scene of much dancing, singing and generally rowdy carryings on. What amounted to a public scandal was brought, first to the attention of the Archbishop who being largely responsible for de Moison's appointment, did nothing about the protests. Appeals to the king fared no better, and it is said that the whole situation played a not inconsiderable part in igniting the Revolution.

Pinel reorganized the whole institution, and trained its personnel, among them his immediate successor, the renowned Esquiral who managed to put France in the forefront of European psychiatry for two or three generations. This was not all. He wrote his monumental "Nosographie Philosophique" and also produced the first edition of his "Traite medico-philosophique sur l'alienation

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mentale" which was for many years a leading text-book.

For many years he labored at the Salpetrière and taught in the University of Paris but in the later years of his life there was a reorganization of the Faculty. A group of young ambitious politically minded members succeeded in bringing about radical changes that resulted in all of the old Senior Professors — Pinel among them — being named Honorary Physicians with nothing to do. It is not uncommon for a man, particularly a physician who has reached the height of his profession, to find that instead of a guide he is merely a target. For a mild mannered man such as Pinel, the jealousies and bickerings were too much. He had no resource of personality to cope with such things. He was given in his later days a pretty cold shoulder by the members of his own profession. But the public at large did not forget his great work and attainments.

There is an interesting little story told of him in these later days. When Napoleon returned from Elba he spied Pinel in the crowd that assembled to welcome the Little Corporal. Speaking to Pinel, Napoleon said, "Doctor, do you think that the insane have been increasing in number since I went away?" Pinel replied that he did not think this was the case. He said later, "My answer was "no," but I thought to myself that superior geniuses and shameless military conquerors are not exempt from a touch of madness."

When he died at the age of 81, the funeral cortege was large and included a great many of his ex-patients. Representatives of the Arts and Sciences attended and eulogized handsomely over the bier but there was no official representative of the Medical Profession. In the crowd was the illustrious Couvillier and he, no doubt shamed at the apparent apathy of the Profession, pushed his way forward and saved the day with extempore yet beautiful remarks, noting afterwards that he had really not said all that could and should have been said.

Pinel's fame has been memorialized in the famous picture by Fleury and by statues in Paris, Edinburgh and very likely other places that I do not know of. In the picture mentioned someone has noted that while the scene depicted is said to have the Salpetrière as its background, the style of architecture indicates that the Bicêtre was the real background.

Selling, whose book "Men Against Madness" has been of great assistance to me, tells of a peculiar thing — so peculiar that one may be pardoned for doubting its accuracy. He relates that when on vacation in Paris he visited La Bicêtre and asked to see the Director. He was informed by the concierge that the Director was on vacation. The concierge asked why he wished to see the Director and Selling replied that he wished to see the parts of the hospital where Pinel worked. "There is no one here of that name," was the reply. Explaining that he was interested in a man who had worked there a hundred years before, the concierge expressed surprise and suggested that he should see the Head Gate Keeper, but this individual told him there was no Dr. Pinel there and the records did not show that there ever had been. On further explanation from Selling and with some cogitation, no doubt accompanied by head scratching, the gate keeper finally said, "Oh, Yes! He was the fellow who used to keep the patients chained up. But we have changed all that now. All the patients are treated very humanely." All this went on just beneath a plaque dedicated to Poussin (the lay director of the hospital in Pinel's day)—and containing highly laudatory reference to the work of Pinel himself.

"Sic transit gloria."

This then is an abbreviated account of the life of one of Psychiatry's real heroes. Let us briefly note some of his qualities and attitudes.

In such material as is available he is invariably referred to as of retiring disposition and placid appearance. His quiet behavior and apparent lack of aggressiveness lost for him the consideration due to his erudition and real enthusiasm. Only when opportunity came his way did his burning enthusiasm, determination and passion for methodical analysis and reporting become evident. His repeated attempts to interest the Revolutionary authorities indicated the pertinacity with which he clung to an objective once it was clearly formulated in his mind. He bore with stupid and vexatious persons with singular patience and his great sympathy with and kindness toward the unfortunate bore wondrous fruit. The lay intelligentsia recognized his merit and heaped honors upon him, but in the end he found himself unable to stand up to the smallness and self-seeking propensities of his own profession.

Of his medical life there are certain things that we should remember. In actual practice he was much inclined to wait and see rather than push blindly ahead into the darkness. He was not at all afraid to question and even break with tradition. He was entirely opposed to blood-letting at a time when it was such a prominent item in the physician's therapeutic armamentarium. To the indiscriminate use of drugs he was also opposed. The use of hellebore as a specific for madness originating with the Greeks still had a place in the materia medica of the time, but Pinel would have none of it.

A primitive type of shock treatment believed in by many including the eminent American physician Benjamin Rush and consisting of the sudden unheralded precipitation of the patient through a trap door in the floor into a cistern of cold water, found no favor with Pinel.

In England at this time purgation was considered to be an efficacious treatment for diseased minds.

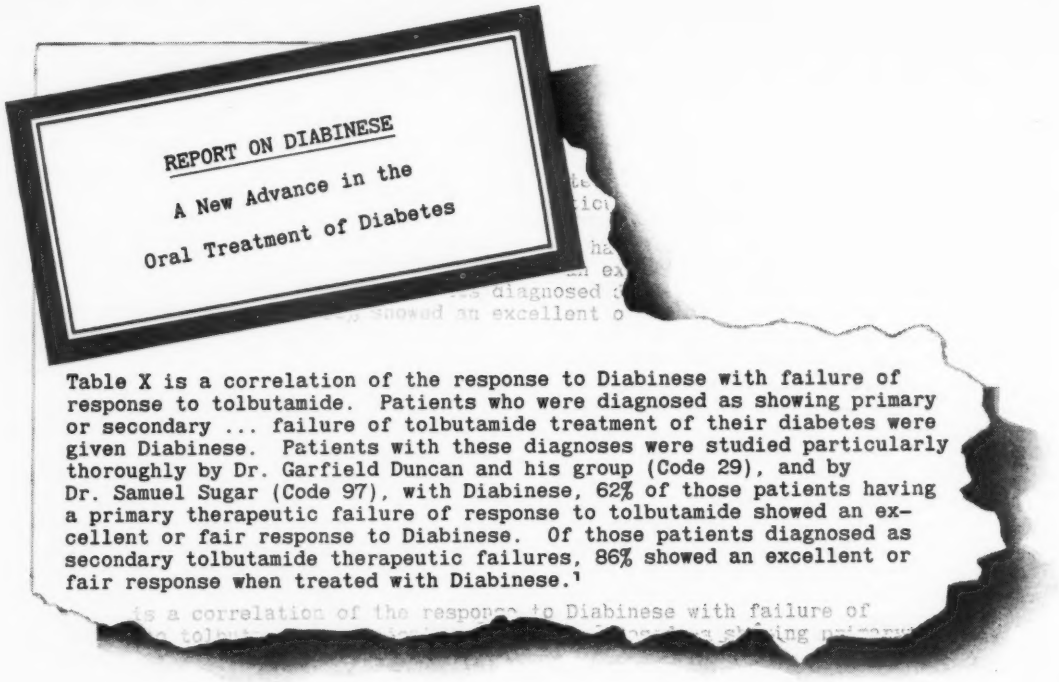
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Table X is a correlation of the response to Diabinese with failure of response to tolbutamide. Patients who were diagnosed as showing primary or secondary ... failure of tolbutamide treatment of their diabetes were given Diabinese. Patients with these diagnoses were studied particularly thoroughly by Dr. Garfield Duncan and his group (Code 29), and by Dr. Samuel Sugar (Code 97), with Diabinese, 62% of those patients having a primary therapeutic failure of response to tolbutamide showed an excellent or fair response to Diabinese. Of those patients diagnosed as secondary tolbutamide therapeutic failures, 86% showed an excellent or fair response when treated with Diabinese.[1]

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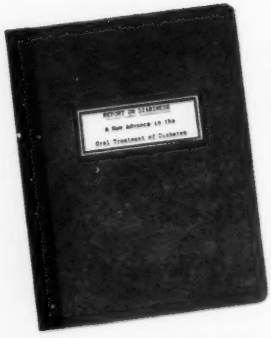

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1. *Summary of Diabinese Study Program*

Pinel, whether jokingly or in earnest, stated that constitutionally the French must be different from the English since they seemed to need twice the amount of this particular type of medication.

He did not entirely do away with some form of restraint and seemingly thought that apart from its safeguarding utility, it did have some curative value. But his restraint was no longer chains and fetters. At most it was represented by what we would now call a strait jacket or camisole.

His early education was steeped in the classics of Greece and Rome and it is not surprising that his whole technique of investigation was typically Hippocratic. The first step was meticulous observation followed by faithful recording and finally by attempted analysis with a view to establishing etiology as the necessary precursor of treatment.

He like other thinkers of the Revolutionary period was strongly influenced by the sensualistic philosophers, John Locke of England and Condillac of France. "Man turns to the senses as to sources of knowledge; to the unprejudiced and faithful observation of realities. Though in the long run man will never be satisfied with what the senses alone have to offer, though again and again his thought will try to reach beyond their message, the fact remains that in times of emergency requiring quick relief man turns to perceptible facts and to experience as to the major sources and resources of his acts." (Reisé).

Unbiased observation with preconception and premature conclusions strictly excluded was the basis of Hippocratic medicine, and so it was with Pinel. His great interest was the natural history of disease. He strove to observe and listen to Nature. Every detail was noted and sooner or later he was able to visualize an organized structure — which without blue print, shaped itself to its natural end — a process to which the whole history of life contributed. No one with a narrow, cut and dried attitude would have written in reference to the multiform factors of disease:

"A constitution, weak from the outset or deteriorated through the excesses of youth or still more through their perpetuation in the decline of life; the tremendous rise of men's ambitions, striving for honor, wealth, academic distinctions, fame; a sedentary life detrimental to the secretions and muscular strength, while overeating and intemperance produce a hypersecretion of the nutritive juices and the numerous artificial stimulations of weakened functions — lack of sleep, overworking, excessive study, intense worries, never-ending troubles, the turmoil of passions in families where tranquillity, order and harmony should reign."

In his attitude toward his work he anticipated that other great man of French medicine — Claude Bernard. Pinel at times referred to his method as Experimental Medicine. Said he: "Experimental medicine means to observe carefully, faithfully and repeatedly to list the general and individual results, to consider the individual constitution, influence of the seasons, life period, etc." This came from a clinician, not an experimenter. What Pinel observed were the phenomena in a natural setting. Bernard wished to observe them in a setting that he could initiate or modify at will. Both were observers.

While intensely interested in the individualistic approach toward the diseased individual, Pinel did try his hand at classification as exemplified in his three large volumes "Nosographie Philosophique." He recognized that all classifications are complex abstractions and that one must recognize countless variations. He finally ended up with four divisions: mania, melancholia, dementia and idiocy, saying that he did not believe that such a basic classification could really be improved upon.

Many have suggested classification of mental disorders but in the end we have had to admit that a thoroughly satisfactory nosography is unattainable since clinical pictures are so played upon and shaded by so many varying factors.

His great work, "Medico-philosophic treatment of Mental Disease," was the standard text in France and indeed throughout Europe for two or three generations and many of the features of present day investigation of these maladies are the children of his thought and practice.

A single torch held high and prominently shining in darkness is a sign of hope and guidance for those seeking their way. Other and lesser lights as they contribute their bit to the lightening of our darkness relatively diminish the brilliance of the original beacon but do not completely obscure or supersede it. Pinel lit and carried such a beacon — that we should not and cannot forget. His dramatic freeing of patients from their chains is what that part of the world which recalls anything about him at all, remembers him by, but this was but one item in his great contribution to psychiatric medicine.

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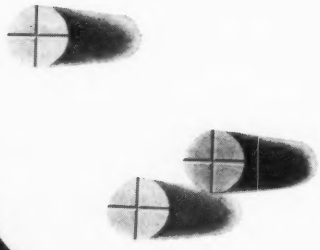

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Orientation literature concerning Orisul is available upon request.

Editorial

S. Vaisrub, M.D., M.R.C.P. (Lond.), F.R.C.P. (C.), F.A.C.P., Editor

Retirement Leisure

Many of our readers are remarking — and not without justification — that some of the matter printed in this column is sadly lacking in dignity that befits an editorial. They feel — and rightly so — that the habit of promoting light chatter and backstage gossip to editorial rank should not be indulged in too often, for, not unlike the habit of wearing checked sport suits at formal functions, it is a source of irritation and embarrassment to those properly brought up and well adjusted, who know that there is a "time and place for everything."

Painfully and penitently aware of this offense to good taste the responsible party promises to be good and not do it again. No more frivolous editorials, except for just this last one, which alongside the last smoke and the last drink will mark the death of a bad habit and the birth of a New Year's Resolution.

The title of this editorial is "retirement leisure." Its subject is the problem that the latter poses for the doctor who wishes to age gracefully. Admittedly, not a burning topic of today, retirement is nonetheless of considerable interest to the aging physician who, looking ahead perceives the dimly glowing embers of tomorrow. Having secured his financial future, the doctor is now ready to plan his retirement leisure to consider ways and means of saturating its idle hours with joy and significance.

That retirement leisure should present a problem at all may seem incongruous. It, certainly, has not created any mental conflicts in the past. "Retirement, rural quiet, friendship, books" — to quote James Thomson — expressed the wish and aspiration of men of culture throughout the ages. Can one think of a more fitting culmination for a life of useful activity than the elegant, content tranquillity of Milton's dream of "retirement leisure that in trim gardens takes its pleasure?"

Times have changed, however, and so have retirement fashions. Idleness amidst serene surroundings is no longer recommended by the psychosocio-therapists. Hobbies are the current fashion. Inactivity, according to the captains of the psyche invites neurosis and psychosis, confusion and despair. The only insurance against the corrosion of the soul and the decay of the mind is a cultivated hobby. The latter will not only strengthen the tenuous hold on life, but will make retirement a most exciting adventure. Freed from worries and responsibilities, leaving behind back breaking and soul crushing obligatory activities, the happy septuagenarian can look forward to pleasant pursuits and the realization of cherished dreams.

Heeding the counsel of the experts, the wise physician will lose no time in preparing himself for retirement and will at once start out on his quest for a congenial hobby. He will probably begin with a visit to the nearest library where he will attempt to consult the literature on the subject. This, however, may well prove to be a frustrating experience, for one glance at the crowded shelves will convince him that the perusal of books on hobbiology demands more time and effort than he can spare in the pre-retirement phase of his life.

Will the eager anticipant of the joys to come abandon the quest and, trusting to luck, drift in hobbidom when the time comes, or rather than adopt this "laissez non faire" attitude will he choose to depend on odds and ends — advice from friends, tips from amateur hobbyists, tid bits from wisdom laden newspaper columnists? To those who are wont to disparage casual advice it may be pointed out that profound wisdom may be found in unexpected places. Here for instance is a treasure of ideas on retirement gleaned from the pages of a local newspaper (The Winnipeg Tribune, 1958): "Hundreds of thousands of older people have never gotten around to tasting some of those treats, such as seeing a ball game, tossing a party, going fishing, watching a hockey game, redecorating their home, exploring a cavern or tasting a broiled lobster. Additional thousands have never seen the ocean, taken a snapshot, flown in an airplane, painted a picture, gaped at Niagara Falls, tried skin diving, gone horseback riding or climbing a mountain. Others have never called on a neighbor, seen a circus, dug for clams, read the Bible, ridden on a ski lift, fired a shotgun, tried beachcombing or camped out overnight. . . "

Overwhelmed by the plethora of the enticing possibilities, overawed by the vastness of the alluring vistas, the eager aspirant to the blissful state of retirement will, undoubtedly, ponder over the suggestions made in the above most helpful quotation and consider their applicability to his own case. Which hobby will he choose? Should he go in for skin diving or dig for clams? Should he ride on ski lifts or take snapshots? Will it be the Bible or broiled lobster?

In selecting his hobby the physician will give his imagination full play. In his mind's eye he will see himself — a pack on his shoulders and a packet of nitroglycerins in his pocket—climbing a mountain. Disregarding intermittent claudication, fallen arches and varicose veins he ascends the treacherous slopes to reach the Summit, exhausted but triumphant.

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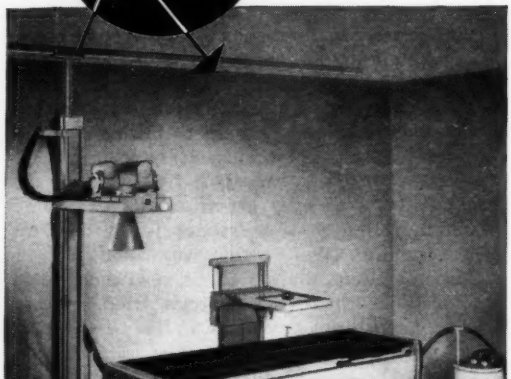

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If the beckoning peaks of the Himalayas hold no appeal for the greying doctor, he can readily project himself into the future in yet another setting. Tall in the saddle, braced by a lumbosacral belt, he rides his horse in the Big Rodeo. Oblivious of his prolapsed disc and protruded piles, tired but exhilarated, he wins the coveted prize.

Should the pleasures of equestrianism fail to attract the eager anticipant of the joys to come, he may relish the vision of himself exploring a cave. Ignoring the cold and the dampness, forgetting his asthma, the wheezing medical speleologist gazes raptly at the newly discovered (by himself, of course) remains of the Neanderthal Man, amidst the splendor of glistening stalagmites and stalactites.

Despite the obvious attractions of the above pursuits, there will remain a few doctors who will find it altogether too easy to resist them. Impervious to the call of adventure, they will remain perplexed and frustrated with nothing to look forward to. It is to these unfortunates, that the following few suggestions are timidly put forth.

To the young in heart, who always wanted to play the drums there is available the hobby of percussion. Whether resonant or dull, flat or tympanitic, the sounds elicited by the striking finger will never cease to amuse and delight him. To the music lover auscultation is recommended. With the aid of a stethoscope he will listen at leisure to the symphonies of murmurs, clicks, rubs, rales, rhonchi, rumbles and split sounds. His memory and imagination will help him to interpret their symbolic meaning. To the light and tender hearted, fond of caresses and the gentle touch palpation is the answer. By placing a hand on strategic anatomic areas he can discover unexpected pulsations and unanticipated thrills.

For the sight-seer, the lover of the breath-taking view, there is the hobby of observation either direct or endoscopic. A wide variety of visual aids—ophthalmoscopes, auroscopes, bronchoscopes, sigmoidoscopes will help him to choose the desired scenery for his cultivated eye.

For the puzzle addict, the lover of brain twisters and conundrums there are the hobbies of electrocardiography, electro-encephalography, or better still that of balancing electrolytes in the forever shifting scenery of homeostasis; for the book worm, the hobby of reading medical books; for the egghead that of the philosophical literature on the fringes of Medicine; for the would be wood carver and whittler handy with the knife and the saw there is the rich surgical arsenal to play with in the antiseptically luxurious operating theaters.

Such are tentative pursuits timidly proffered in the hope that those who cultivate them find the road to happiness. Should they also find in the process that the day of retirement seems to recede, never to be caught up with, let them not be grieved. There will still be time for one last hobby—that of playing the harp up high above the clouds.

It is never too late for that.

Obituaries

Dr. William Edward Chasney, 66, died on Nov. 25th. He graduated in 1922 from McGill, obtained his L.M.C.C. degree in 1922 and registered in Manitoba in 1923. He carried on a general practice in North Winnipeg and is survived by his wife.

♦

Dr. Cramond C. Wright, 43, died suddenly on November 14th while driving from Winnipeg to Dauphin. He graduated M.B., Ch.B. from Aberdeen University in 1939, had military service from 1940 to 1946 and secured his D.P.H. from Aberdeen in 1947. He obtained his Manitoba licence in 1953 and served in the Dauphin Health Unit. His wife and two children survive him.

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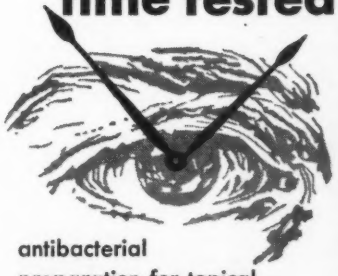

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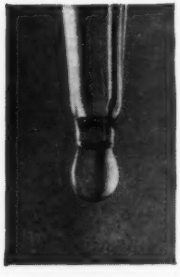
widely used  and

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Abstracts from the Literature

Peptic Ulcer in Rheumatoid Patients on Corticosteroid Therapy: A Clinical, Experimental and Radiologic Summary. Kammerer, W. H., Freiberger, R. H. and Rivelis, A. L. (Cornell Medical School, New York, N.Y.). Arthritis and Rheumatism 1: 122, April, 1958.

This paper reports studies, started in 1955, of the effects of corticosteroids on gastric secretion and the occurrence of peptic ulceration in patients with rheumatoid arthritis.

Studies of gastric secretions were made in fourteen healthy medical students, before and after a week's treatment with either hydrocortisone, prednisone or prednisolone in varying dosage. The results showed (a) a moderate decrease in viscosity of gastric secretion with all three corticosteroids, (b) no significant change in 24 hour uropepsin excretion, (c) an average increase of 10 units of free HCl per hour over levels in six subjects receiving hydrocortisone or prednisone, but no increase in the HCl in eight subjects receiving prednisolone and (d) an increase in total 2 hours volume in five subjects on hydrocortisone or prednisone. It was thought that these changes were insufficient to affect ulcer pathogenesis.

Clinical and radiological studies included x-ray examinations of 117 rheumatoid patients on maintenance steroid therapy, a group of similar patients without steroids for at least six months and a group of non-rheumatoid controls, also similarly matched. Peptic ulcer was demonstrated in 36 of 117 steroid treated cases (31%), 9% of the non-treated cases, and questionable findings in but two of the non-rheumatoid controls. There was no significant difference in incidence in males or females, nor did duration of disease or of steroid therapy appear to be a factor. No conclusion was drawn as to relative ulcerogenic properties of the different steroids. Ulcers occurred more often in those receiving higher steroid dosage. Ten of the patients had minimal or no ulcer symptoms, and two who perforated had no prior G-I symptoms. The usual complications of peptic ulcer were found. Healing of the ulcers occurred in as little as three weeks, but in some was delayed for months. It was not clear that treatment of the ulcers greatly influenced the healing processes, since several developed in patients on modified ulcer therapy. In some cases, healing occurred while steroids continued.

Thirty of the ulcers were in the antrum of the stomach, five were duodenal and one in the pyloric canal. The usual ratio in the New York Hospital is one gastric to 10 duodenal ulcers. Of the 30 gastric ulcers, eight were on the greater curvature of the antrum, a most unusual place for a benign ulcer to occur spontaneously.

R. H. McFarlane, M.D.

Atherosclerosis and the Serum Mucoprotein Levels of the Australian Aborigines: Schwartz, C. J. and Casley-Smith, J. R., Australian J. Exper. Biol. & Med. Sc., 36, 117, (Apr.) 1958.

Three groups of healthy normal males were investigated. The first group consisted of full-blooded tribal males, living nomadically in the desert. The second group of males was of mixed tribal origins, with acquired dietary and living habits closer to the whites of the area. The third group consisted of Australian males of European descent.

The nomadic aborigines (first group) had a highly significant depression of the serum mucoprotein level, when compared to the second and third groups. The difference in levels between detribalized aborigines (group II) and the white Australians (group III) is not significant. Some differences between the nomadic tribal environment and the urban environment (possibly dietary) is involved. The findings support the idea that connective tissue ground substance breakdown may play a role in the pathogenesis of human atherosclerosis.

A. G. Rogers.

♦

The Development of Prematurely Born Children With Birth Weights or Minimal Post-Natal Weights of 1,000 Grams or Less: Margaret Dann, S. Z. Levine and E. V. New. Pediatrics, Volume 22, No. 6. December, 1958.

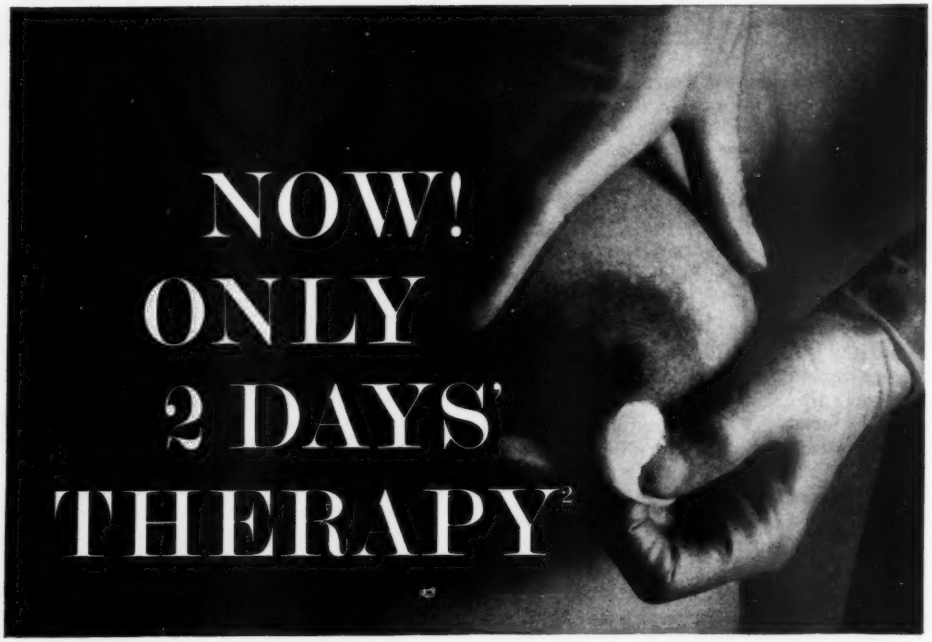
This paper records physical, mental and social development in 73 children whose birth weights were less than 1,000 grams. This was part of a long range study to determine if the child who survives the handicaps of prematurity has a good chance of developing into a healthy and useful citizen. These prematures eventually caught up in height to normal standards for chronologic age after four years of age. The incidence of eye defects was high (due to retrolental fibroplasia). Intelligence quotients revealed a range of 59 to 142 with a mean I.Q. of 94. This was compared to a mean I.Q. of 107 found in 34 full term sibling controls. A significantly higher proportion of children with an I.Q. above 100 was found among families of higher social-economic rating. No consistent relationship was found between the I.Q. and physical development and defects of the eyes.

M. Kowall.

♦

Intussusception in Infancy and Childhood. Mark M. Ravitch. An analysis of 77 cases treated by Barium Enema. New England Journal of Medicine, 259: 22, November 27, 1958.

The author analyses 27 cases of Intussusception in infancy and childhood at the Johns Hopkins



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1. Nulsen, R. O. et al.: Am. J. Obst. & Gynec. 65:1048, 1953. 2. Nulsen, R. O.: Concurrent administration of TACE and Ergonovine, Ohio State M. J. *(in press)*. 3. Bennet, E. T. and McCann, E. C.: J. Maine Med. Assoc. 45:225, 1954. 4. Eichner, E. et al.: Obst. & Gynec. 6:511, 1955.

TRADEMARKS: 'TACE WITH ERGONOVINE,' TACE

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Hospital. This current article is intended to be used in conjunction with a previous report of 32 patients treated primarily by barium enema reduction. This diagnosis accounts for approximately 18 to 19 percent of cases, of which one-eighth to one-half may die. The average duration of symptoms from onset to the initiation of treatment was 25 hours, although three cases of chronic intussusception continued from 21 to 53 days. The author is in accord with Scandinavian and Australian writers who demonstrate that hydrostatic pressure with barium enema under fluoroscopic control is the safest and most effective way of reducing intussusception. In the author's hands sixty percent of cases of intussusception were reduced by barium enema alone. In 199 cases of intussusception only 6.5 percent had any organic lesion. The children with specific lesions were considerably older than the majority of the group. It is the author's opinion that, although barium enema can and should be administered to every child with intussusception regardless of the duration of the process, it should not be persisted in. In the author's series there were three out of 77 cases of recurrence after a barium enema reduction, which is little if at all higher than the reported rate of recurrence after primary operative procedure.

M. Kowall.

Book Reviews

Obstetrical Practice: Alfred C. Beck and Alexander H. Rosenthal, 7th Edition, 1958. Williams and Wilkins Co., Baltimore. 115 pp., 926 figures, appendix of 22 X-ray plates. $14.00.

This widely acclaimed text undergoes a comprehensive revision in the new edition. Important changes in keeping with recent advances are made in chapters dealing with the placenta, pre-natal care, pregnancy, labour, puerperium, radiography, pitocin drip, umbilical cord, multiple births, hydramnios, hydatidiform mole, choriocarcinoma and many other subjects in the fields of obstetric diagnosis and management.

There are some omissions in the book, despite the thorough revision, but these may have been intentional. Among these may be listed the Lovset manoeuvre, and the Burns Marshall technique for breech delivery; the Klink method of pudendal nerve infiltration; grading by degrees of placenta praevia; Moir's 1949 paper on measuring the obstetric valve of the pelvis and a separate chapter on the important subject of perinatal mortality.

One may also take issue with some of the assertions and recommendations in this book. It is questionable, for example, whether "routine" use of an intravenous drip of 5% glucose in water as recommended in the text is really advantageous in every confinement. Also, present statistics indicate that, contrary to the pessimistic views of the authors, the first baby born of an Rh negative mother and Rh positive father, is seldom in danger. Two or three healthy children are born of such a union before antibodies may become a hazard.

It is of local interest to note that contributions by University of Manitoba workers to the obstetric field have been quoted in this textbook. The names of Drs. Bruce Chown, F. G. McGuinness, D. Nicholson and A. A. Earn are mentioned in connection with their particular lines of investigation.

On the whole, this textbook is of a high degree of excellence. The method of presentation with accompanying line drawings and references are outstanding. "Obstetric Practice" is recommended to medical students, residents, practitioners of medicine and specialists.

A. A. E.

♦

Urology in General Practice: Frank Coleman Hamn, M.D., M.S., F.A.C.S., Sidney R. Weinberg, M.D., F.A.C.S. Published 1958 by J. B. Lippincott Co. 286 p.p. and illustrations.

This book covering general aspects of urology was written specifically for general practitioners and medical students. In general, the material in the book is very well organized and presented in an interesting and easily read form. The author and co-author teach Urology at the State University of New York, Downstate Medical Centre.

One aspect of this book that appeals to the reviewer particularly is the way that the authors have applied the basic sciences of anatomy, physiology and pathology to disease entities. The different sections of the book are well organized. The quality of the paper is good and the printing is very easily read. There are an unusual number of good illustrations, particularly x-ray reproductions. The chapter on urinary infections covers the subject very well. The use of antibiotics and chemotherapy insofar as urinary infections are concerned is well presented.

The authors have done an excellent job of assessing and interpreting urological signs and symptoms commonly encountered in general practice. The section on diseases of the bladder and prostate, although somewhat brief, is very good and should be adequate for medical students and practitioners. The chapter on endocrine aspects of urology is good and quite complete for a book of this nature.

On the whole, this book will find ready acceptance by the profession at large.

E. K. V.

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Social News

Reported by K. Borthwick-Leslie, M.D.

O.K., O.K. — Everything is quiet and respectable, but surely over the festive season at least one of our profession could have made the headlines—but no — searching through the press — Tribune, etc., cannot find a durned thing with "Mrs. Winchell," M.D. (Hope she doesn't sue me for alienation of name.) No scandal — no gossip.

♦

As for Xmas Eve, of course I could let loose, but then comes another possible legal complication. Shall we just say that Margaret Hillsman, Jr., spent the holiday season at home with her parents, Dr. John and Margaret Hillsman. Margaret is for sure enjoying her course at Harvard University at Radcliffe College.

♦

One item of interest (his parents live across the street from me and I had to beat the statistics out of him)—a good looking charming lad—R. Douglas Sproul,'52, who sensibly was a G.P. in the Gladstone district for two years. Then from a **very** sensible point of view said "phooey" and in '54 went to Montreal to do P.G. work in Radiology at the Royal Victoria Hospital. After three years he gained his diploma from McGill University and from Quebec, another year in Diagnostic Radiology and to date has all certificates including the American Council in Washington, D.C., as of Nov., 1958. Dr. Sproul and his wife (nee Eleanor Bridges) with daughter Eleanor, 2½ years, and Stephen, 3 months, spent the festive season with their respective parents in town. Stephen had a the good luck to be baptized here December 14th in St. Martin's-in-the-Field Church instead of in that far East Montreal. By the way, Dr. Sproul is now attached to the staff of the Neurological Institute of Montreal.

♦

Speaking of Montreal . . . Mr. and Mrs. Allan L. Heath announce the engagement of their only daughter Joyce Marlyn to John Alexander Borthwick-Leslie, son of Dr. K. Borthwick-Leslie, Fort Garry, Man., and Dr. Walter Leslie, Halifax, N.S. The wedding will take place February 14, 1959, at 3 p.m. in Gardenville United Church, Longueuil, Que.

Dr. and Mrs. Emmet Dwyer announce the engagement of Moira Ellen to Mr. Joseph Allan MacDonald, son of Mr. and Mrs. Allen MacDonald, Charlottetown, P.E.I. The wedding will take place Saturday, January 31, 1959, 11 a.m., in St. Ignatius Church, Winnipeg.

♦

Congratulations to the parents and welcome to the clan to . . .

Margot Elizabeth Ferguson, who arrived Dec. 28, 1958 — welcomed by Dr. and Mrs. G. L. Ferguson (nee Davidson).

♦

Joel Stephen Burke, baby brother for David Lewis, Nov. 29, 1958, proudly announced by Dr. and Mrs. M. E. Burke, Pearce Ave., Garden City.

♦

David Lawrence Cutler, Dec. 6, 1958, was in time to say "Merry Xmas" to his parents, Dr. and Mrs. Noel Cutler.

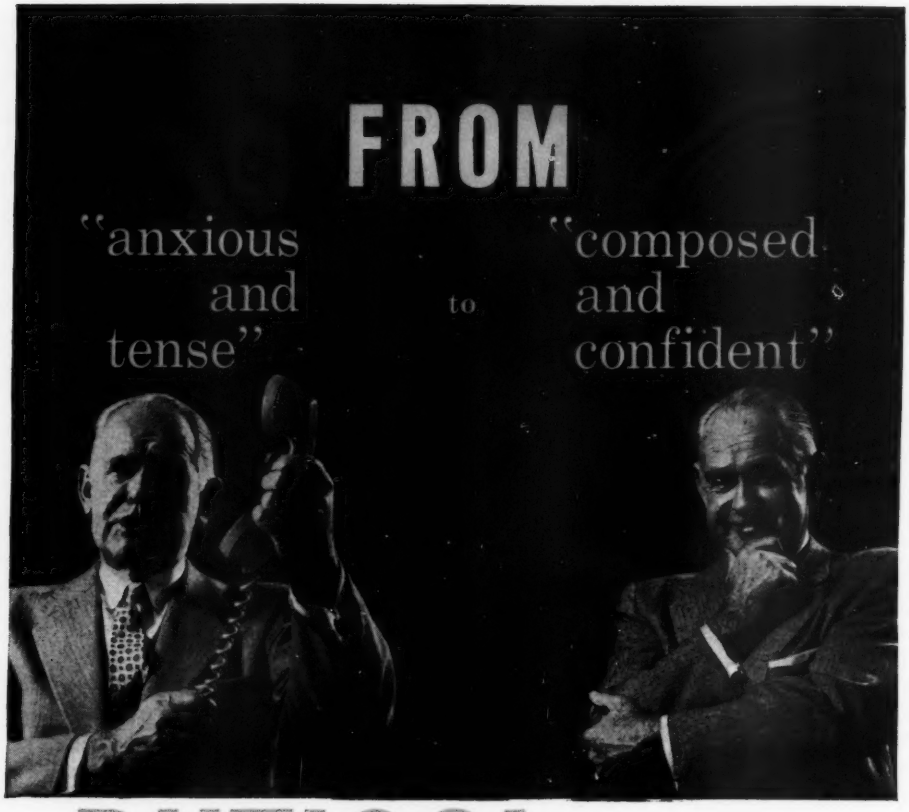
Wonder if they understood what those burbly sounds meant? Do hope so.

♦

Dr. and Mrs. J. W. O'Toole (nee Betty McCarthy) because of Thomas Lawrence, being speechless when he saw Kathy, Dennis, Patrick, Peggy and Maureen, when he arrived home to say "Welcome Tommy" as of Dec. 13, 1958.

♦

P.S. — Please, someone, do something, either clever, scientific or sinful before the next issue. I'm bored. Couldn't one of us at least drain the "Big Dipper" and compete in a small way?



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1. Grossman, A. J.: Batterman, R. C., and Leifer, P.: Fed. Proc. *17*:373 (March) 1958.

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Association Page

Reported by M. T. Macfarland, M.D.

North of 53 District Medical Society

A meeting of the North of 53 District Medical Society was held at The Pas on Thursday and Friday, December 4th and 5th, 1958.

The Winnipeg party was met at the airport by Dr. S. L. Carey, who acted as luncheon host at the Clearwater Sanatorium of which he is Medical Superintendent.

Following the drive to The Pas, the scientific session was convened in the classroom, St. Anthony's Hospital. Those attending were Doctors Jos. Leicester, President; S. L. Carey, Secretary-Treasurer; A. P. Chornomoretz, H. N. Colburn, D. L. Gemmell. A. L. Jacobs and H. J. Wisinger; Doctors A. Marrack, G. N. Willson and W. R. Ross from Flin Flon; Doctors J. D. Adamson, E. G. Brownell, D. A. I. Grewar, E. S. James and M. T. Macfarland from Winnipeg, also Dr. Ed Johnson, Selkirk.

Dr. E. G. Brownell spoke on the subject "Rheumatism with Special Reference to Rheumatic Fever," illustrated by slides. Dr. D. A. I. Grewar spoke on the subject "Infantile Diarrhoea." Dr. E. S. James spoke on "Common Orthopaedic Problems," illustrated by several X-ray films.

A reception at the home of Dr. and Mrs. Jos. Leicester was followed by a delicious dinner at St. Anthony's Hospital, prepared and served under the direction of Sister Gauthier and staff.

Dr. Ed Johnson, President, and Dr. M. T. Macfarland, Executive Director, of the Manitoba Medical Association, spoke briefly, followed by Dr. J. D. Adamson, Consultant to Manitoba Hospital Services Plan.

After the meeting Dr. and Mrs. A. L. Jacobs entertained the guests at their home.

On Friday morning ward rounds were held at the hospital and lunch at the Cambrian Hotel. A good time was had by all in spite of the wintry weather, and the next meeting will probably be held at Flin Flon.

Sectional Meeting in Vancouver, B.C. February 26 - 28, 1959

Surgeons and related medical personnel are invited to attend the three-day Sectional Meeting of the American College of Surgeons in Vancouver, British Columbia, February 26 - 28, 1959. Headquarters will be the Hotel Vancouver, with sessions also at the Vancouver General Hospital.

Clinical Reviews

Mayo Clinic and Mayo Foundation

Rochester, Minnesota

April 13, 14, 15, 1959

Staff members of the Mayo Clinic and the Mayo Foundation for Medical Education and Research will present again this year a three-day program of lectures and discussions on problems of current interest in general medicine and surgery.

Up to twenty-one hours of Category I credit may be obtained by American Academy of General Practice members who attend.

There are no fees for this program.

The number of physicians who can be accommodated is necessarily limited. Those wishing to attend should communicate with the Clinical Reviews Committee, Mayo Clinic, Rochester, Minnesota.

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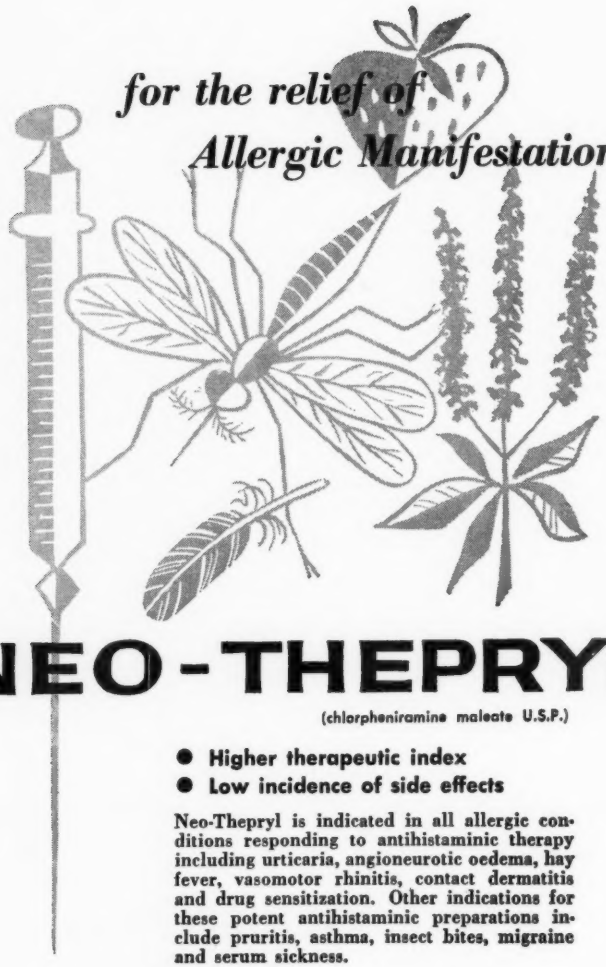

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PUBLISHED REFERENCES: 1. Carpenter, E. B.: Southern Medical Journal 51:627, 1958. 2. Forsyth, H. F.: J.A.M.A. 167:168, 1958. 3. Little, J. M., and Truitt, E. B., Jr.: J. Pharm. & Exper. Therap. 119:161, 1957. 4. Morgan, A. M., Truitt, E. B., Jr., and Little, J. M.: J. Am. Pharm. Assn., Sci. Ed. 46:374, 1957. 5. O'Doherty, D. S., and Shields, C. D.: J.A.M.A. 167:160, 1958. 6. Park, H. W.: J.A.M.A. 167:168, 1958. 7. Truitt, E. B., Jr., and Patterson, R. B.: Proc. Soc. Exper. Bio. & Med. 95:422, 1957. 8. Truitt, E. B., Jr., Patterson, R. B., Morgan, A. M., and Little, J. M.: J. Pharm. & Exper. Therap. 119:169, 1957.

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Skeletal muscle spasm secondary to acute trauma	33	26	6	1	—
STUDY 2[2]		"pronounced"			
Herniated disc	39	25	13	—	1
Ligamentous strains	8	4	4	—	—
Torticollis	3	3	—	—	—
Whiplash injury	3	2	1	—	—
Contusions, fractures, and muscle soreness due to accidents	5	3	2	—	—
STUDY 3[5]		"excellent"			
Herniated disc	8	6	2	—	—
Acute fibromyositis	8	8	—	—	—
Torticollis	1	—	—	1	—
STUDY 4[6]		"significant"			
Pyramidal tract and acute myalgic disorders	30	27	—	2	1
TOTALS	138	104 (75.3%)	28 (20.3%)	4	2

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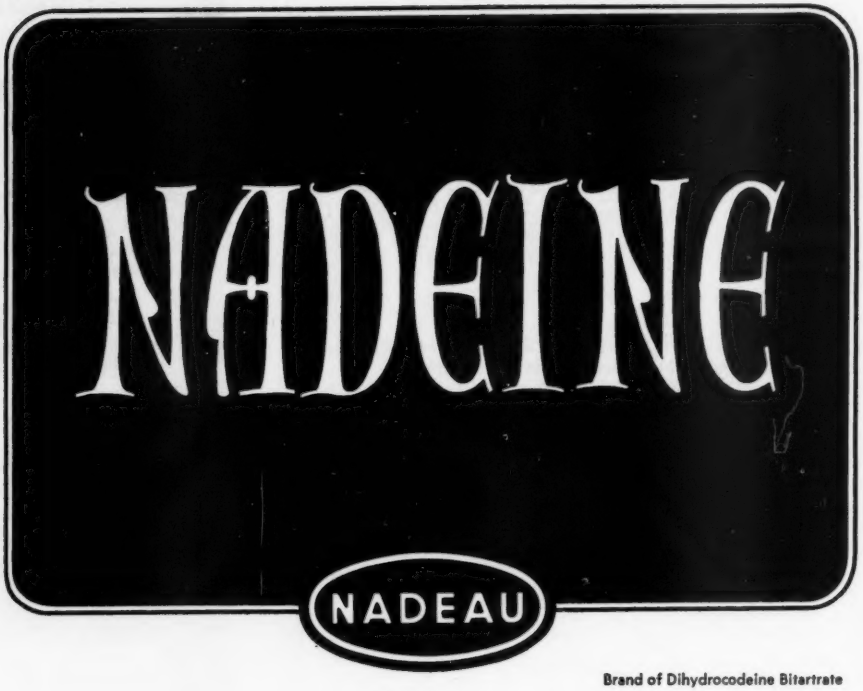

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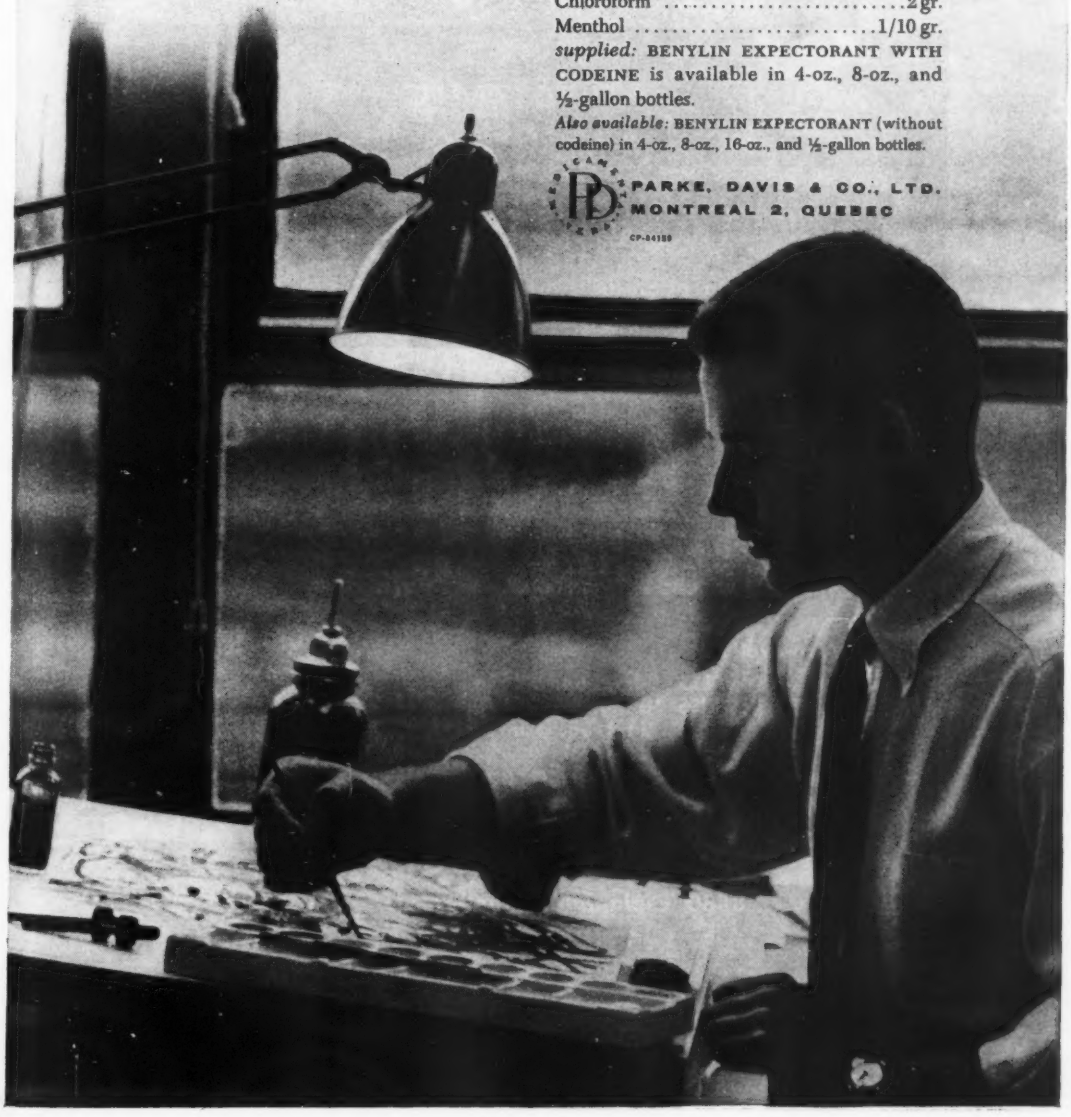

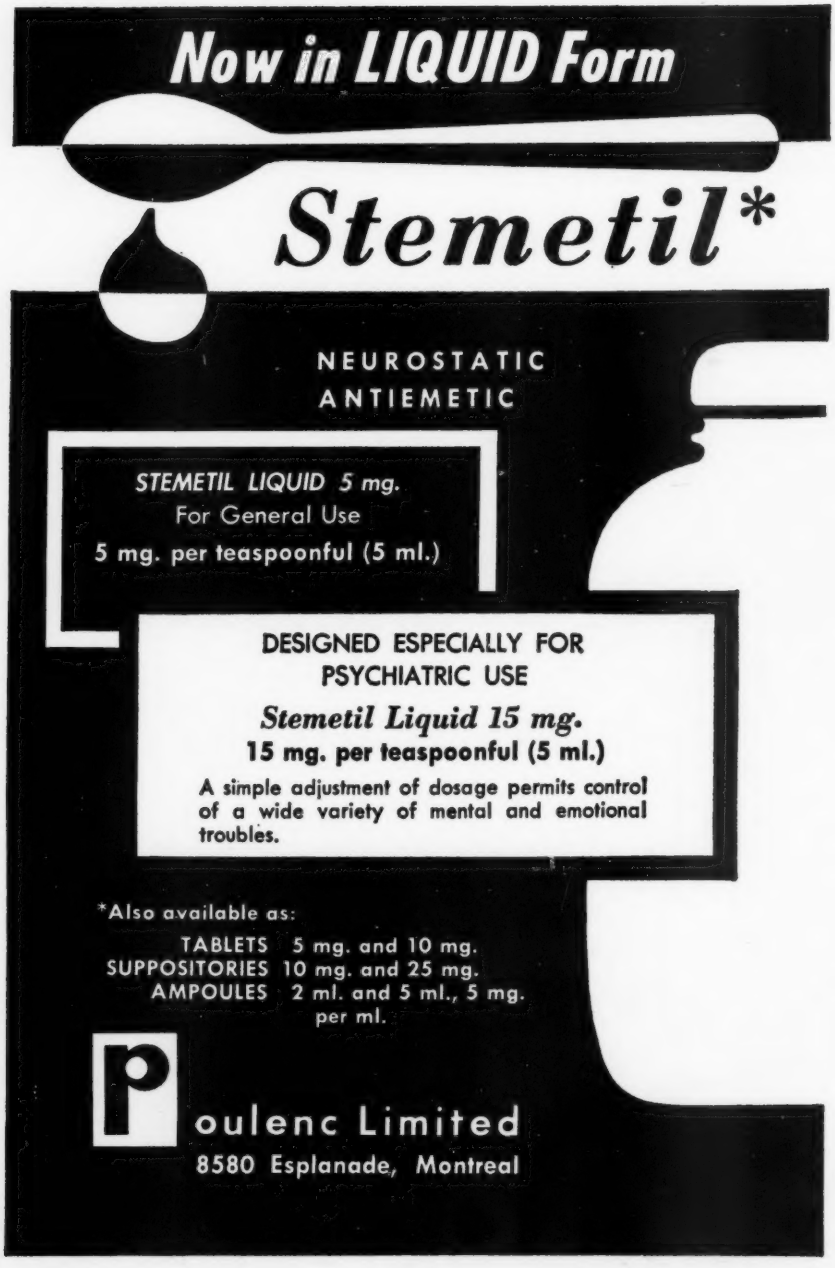
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- G. J. Bowen ..... GR 5-4559
- R. G. (Bud) Harman ..... LE 3-7509
- Alan (Al) M. Grant ..... AL 6-0125
- Bruce Hunter ..... GL 2-5263

Ames Company of Canada, Ltd.
- W. H. Davis ..... VE 2-4869

Arlington-Funk Laboratories, division U.S. Vitamin Corp. of Canada, Ltd.
- Ed Lessor ..... GL 3-0807

Ayerst McKenna and Harrison
- W. R. Card ..... HU 9-7115
- C. C. Savage ..... SU 3-4558
- Jack Ostrow ..... ED 4-3240

British Drug Houses
- W. S. Langdon ..... GL 3-1325
- H. Harvey ..... TU 8-5341

Ciba Company Ltd.
- Edward Stephany ..... HU 9-7292
- Leslie D. MacLean ..... CE 3-3240

Connaught Laboratories
- Brathwaites Ltd. ..... WH 2-2635

Frosst, Charles E.
- W. M. Lougheed ..... HU 9-3963
- W. J. McGurran ..... AL 3-0722
- E. R. Mitchell ..... HU 9-6164
- R. P. Roberts ..... AL 3-4032

Lederle Laboratories
- J. G. Jonasson ..... SP 5-4862
- W. C. Hall ..... HU 9-2207
- J. E. Smith ..... AL 3-0437

Merck, Sharp and Dohme (Canada) Ltd.
- W. G. Ball ..... GR 5-5702
- Noel J. Pritchard ..... GL 2-6880
- E. J. Strimbicki ..... AL 3-5767

Merrell Company, The Wm. S.
- Norman Haldane ..... VE 2-3909
- L. Raymond Scott ..... SP 4-8079

McNeil Laboratories of Canada Ltd.
- B. M. Coutts ..... JU 2-5920

Nadeau Laboratory Ltd.
- Andrew Desender ..... CH 7-4909

Parke Davis & Co.
- L. W. Curry ..... HU 9-1138
- B. S. Fleury ..... GL 3-7071
- R. J. Robinson (Brandon) 92-288
- J. B. Peters ..... VE 2-3862

Pfizer Canada
- E. E. Conway ..... TU 8-1193
- W. R. Mitchell ..... GL 3-6226
- W. G. Johnston ..... TU 8-1391
- Blake Johns ..... SP 5-1404

Poulenc Limited
- W. J. Plumpton ..... GR 5-5561
- Archie W. Lee ..... GR 5-1588

Robins (Canada) Ltd., A. H.
- Harold Tetlock ..... SP 5-5624
- Fred Gallinger ..... ED 4-1367

Schering Corp. Ltd.
- Halsey Park ..... HU 9-4346
- John D. Nicolson ..... LE 3-4447
- Allan L. Segal ..... HU 9-7701

Searle & Co., G. D.
- Harry Chambers ..... LE 3-6558

Squibb & Sons, E. R.
- A. B. Shaen ..... GL 2-9859
- M. G. Waddell ..... GR 5-1552

Will, Charles R.
- A. C. Payne ..... VE 2-2055

Winthrop Laboratories
- R. M. Kelly ..... Res. GR 5-6038
- A. E. Pauwels ..... CE 3-2024

Wyeth & Brother, John
- A. W. Cumming ..... HU 9-5694
- Stuart Holmes ..... JU 9-4273

DEPARTMENT OF HEALTH & PUBLIC WELFARE

COMMUNICABLE DISEASE PICTURE

LIST OF DEATHS FROM COMMUNICABLE DISEASES
November, 1958

URBAN: Cancer, 67; Diphtheria, 1; Encephalitis (infectious), 1; Jaundice (infectious), 1; Pneumonia Lobar (490), 1; Pneumonias (other forms), 7; Tuberculosis, 1; Chickenpox, 1. Other deaths under 1 year, 26. Other deaths over 1 year, 211. Stillbirths, 10. Total, 327.

RURAL: Cancer, 22; Diarrhoea and Enteritis, 4; Influenza, 1; Measles, 1; Pneumonia Lobar (490), 3; Pneumonias (other forms), 4; Tuberculosis, 1; Bacillary Dysentery, 1. Other deaths under 1 year, 8. Other deaths over 1 year, 141. Stillbirths, 6. Total, 192.

INDIANS: Diarrhoea and Enteritis, 2; Pneumonias (other forms), 1. Other deaths under 1 year, 0. Other deaths over 1 year, 4. Stillbirths, 1. Total, 8.

General

There were seven cases of poliomyelitis compared with twenty-six during the previous four week period. The onset date of the last reported case was November 12th. Scarlet fever appears to be increasing in the Winnipeg and central areas.

North of 53 District

Forty-six cases of diarrhoea and enteritis under one year reported during this period, most of these were late reported cases which had occurred during previous months. Seven cases of bacillary dysentery reported, these also are not new cases. Three of the seven cases of poliomyelitis reported in the province were from this area. Measles is still occurring.

Northern District

Another nine cases of influenza have been reported.

Northwestern District

Nothing of significance to report from this area.

Winnipeg District

Four cases of poliomyelitis reported but the onset dates of these were prior to November 15th. There is still an epidemic of scarlet fever in this area. Forty-one cases of infectious jaundice.

Brandon District

Six cases of bacillary dysentery. An increase in the number of cases of chickenpox, measles and German measles.

Central District

Three cases of diphtheria occurred in a relatively isolated, poorly immunized school district. Two of these cases died. None of these three cases had received diphtheria toxoid. Thirteen cases of scarlet fever were reported. Measles is still prevalent.

Southern District

Fourteen cases of measles were reported.